Assessing Substance Use Prevention Needs in Michigan Counties: A Study Using Social Indicators

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ASSESSING SUBSTANCE USE PREVENTION NEEDS IN MICHIGAN COUNTIES: A STUDY USING SOCIAL INDICATORS

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Executive Summary

In 1999, the Division of Quality Management and Planning of the Michigan Department of Community Health was awarded a contract by the Federal Center for Substance Abuse Prevention (CSAP) to conduct a family of studies to assess the State=s substance use prevention service needs. One of these studies, referred to as the social indicator study, was designed to make use of existing and readily available data at the county level for the purpose of characterizing substance abuse levels and types of risk for substance abuse for each county in the State. Ultimately, the findings derived from the study, especially when used in combination with other information and data sources, are expected to provide a useful tool for better assessing prevention needs and for planning appropriate prevention strategies in local areas across Michigan. This report presents the social indicator data collected in the course of the study, along with information regarding the methods used to identify, collect, and process the data, and guidelines for using the data effectively.

The heart of this report is the display of 19 risk constructs, derived from a larger set of social indicators, for every county in the State. The constructs reflect various dimensions of substance abuse and substance abuse-related problems and outcomes that may exist in communities, as well as sociodemographic characteristics and vital statistics believed to be associated with substance abuse and the risk for substance abuse. These data constitute the core findings from the social indicator study and contain the information that may most directly be useful to local planners and service providers. The chapter that contains these data is preceded by chapters that (1) provide an overview of the study, (2) introduce the concept and purposes of social indicator approaches to substance abuse prevention needs assessment, (3) describe the methodology used for this particular study, and (4) provide guidelines for the effective use of the data.

The final two chapters examine the overall risk of each county and provide a review of the lessons learned regarding the conduct of social indicator studies. It also includes recommendations regarding actions that may facilitate the effective use of the findings from this study and the incorporation of a social indicator approach in the State's future prevention planning system. The recommendations build on the belief that the primary users of the data are at the local level and that the acceptance and input of these users are important for the long-term viability of a social indicator component to the State=s prevention planning efforts.

1. Introduction

1.1 Substance Abuse in Michigan: The Critical Need for Effective Prevention Strategies

The use and abuse of alcohol, tobacco, and illicit drugs constitute an important public health problem in the State of Michigan. Given the high prevalence and devastating impact of substance abuse, drug and alcohol use and abuse are high priorities for Federal, State, and local governments. State-level data from the 1999 National Household Survey on Drug Abuse estimate high levels of substance use. In the month preceding the survey, 21 percent of Michigan residents aged 12 or older drank heavily (or "binge" drank), 34 percent used tobacco, and 7 percent used an illicit drug at least once (Substance Abuse and Mental Health Services Administration, 2000). These percentages translate to nearly 1.7 million binge drinkers, 2.6 million tobacco users, and 564,000 illicit drug users in just one month.

Reducing the prevalence of substance use and abuse and their enormous social and economic costs remains a high priority for both Michigan and the Nation. To meet this objective, the Office of National Drug Control Policy (ONDCP) has identified prevention as the number-one goal in the National drug control strategy. Specifically, this goal is to "educate and enable America's youth to reject illegal drugs as well as alcohol and tobacco" (ONDCP, 2001).

Prevention of substance abuse is a high priority for Michigan that will have positive benefits for its citizens.

Applying prevention principles and approaches to the task of reducing substance use and abuse makes good sense. Although there is strong conceptual justification for a prominent role of prevention in reducing Michigan's substance use problems, many challenges remain with respect to developing a systematic planning approach that will maximize the benefits of prevention efforts. Not all prevention programs and strategies are equally effective or appropriate for the full range of populations and geographic areas in need. Needs assessment studies are one tool that can be used by states and local entities to inform the selection of useful and appropriate prevention strategies and thereby use their prevention resources to maximum advantage.

1.2 Prevention Planning in Michigan

The Michigan Department of Community Health (MDCH) is the single State authority designated in Michigan to administer U.S. Department of Health and Human Services (DHHS) Substance Abuse Prevention and Treatment (SAPT) Block Grant funds. The mission of MDCH, as it relates to substance abuse, is to promote the health and welfare of individuals through the reduction of substance abuse and to participate in efforts to address its social, personal, and economic consequences. To accomplish this mission, MDCH administers state and federal funds, advocates effective public policy, and develops human, programmatic and financial resources.

The State of Michigan has 83 counties and seven substate research study areas (see Exhibit 1), referred to as regions, that are used for planning and administration of services. The regional structure for delivery of prevention services consists of 15 Coordinating Agencies (CAs) (see Exhibit 2), each with a funded full-time Prevention Coordinator. The CAs are responsible for planning, coordinating and contracting for direct services within their regions. MDCH allocates funds to CAs, which in turn fund direct treatment and prevention service providers. Additionally, Prevention Coordinators also provide training and leadership to the providers in their jurisdiction, and participate in special initiatives, drawing on their knowledge of regional issues and provider contacts.

The Michigan Public Health Code (P.A. 368) requires that all organizations or individuals who provide substance abuse services to the public be licensed by the state Department of Consumer and Industry Services (MDCIS). Approximately 270 service providers are licensed solely to provide prevention services. In addition, 400 licensed treatment programs also are licensed to provide prevention services, thus assuring a continuum of care for substance abuse services in Michigan.

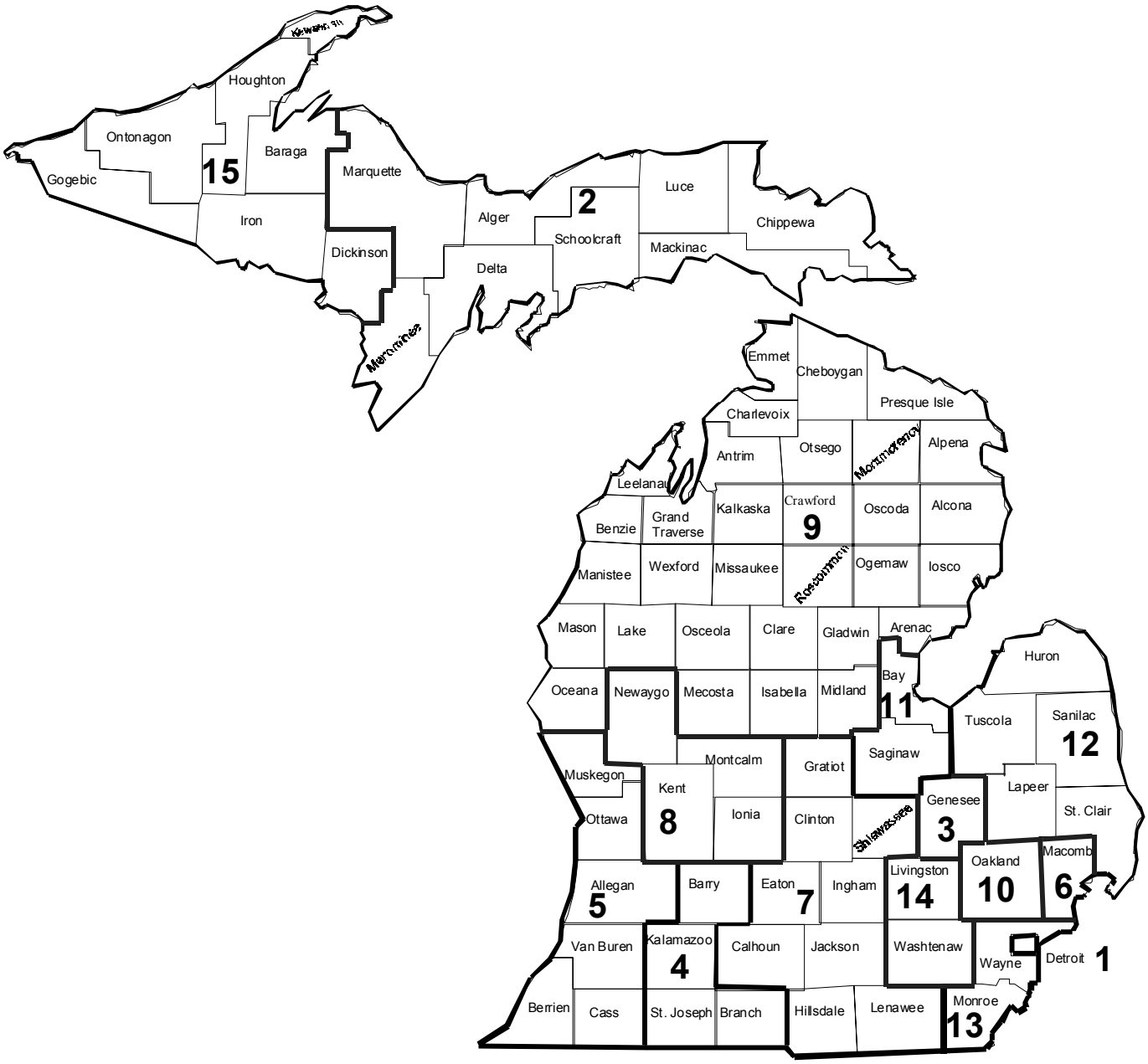
In the past five years, major substance abuse prevention initiatives to improve the efficiency and quality of Michigan's services included: a series of training-of-trainers sessions on risk-focused and research-based prevention for the Prevention Coordinator Network as well as Michigan's partners in prevention (e.g., juvenile justice community prevention staff, school district coordinators and CSAP community partnership directors); workgroups to look at more effective statewide prevention program evaluation; and standards for prevention personnel credentialing. A concept paper on community health assessment based on the work of David Hawkins and Minnesota's Search Institute was included in the Substance Abuse Indicators for Community Health Assessment report of FY 96 (MPHI, 1996).

MDCH recognizes that prevention is the key to addressing major health problems of widespread concern, as well as related social problems. Accordingly, over the past six years MDCH has provided increasing support to strengthen substance abuse prevention in Michigan. Currently, information relevant to prevention needs assessment is available through a variety of mechanisms, including:

- The Michigan Substance Abuse Risk and Protective Factors 2000/2001 Student Survey: Public School Results (available on MDCH web page)
- The Michigan Community Prevention Systems Assessment (COMPSA) report (forthcoming)
- The Community Health Assessment and Improvement process facilitated by local health departments
- Substance abuse prevention high risk services data and reports collected through the regional Coordinating Agencies
- CSAP-funded Community Partnership grantee surveys of 10 local communities
- Composite Prevalence Estimates of the Need for Substance Abuse Treatment Services in Michigan (Version 2.0)

Exhibit 1. Michigan Planning Regions by County

Exhibit 2. Michigan Coordinating Agencies by County (FY 2002)



- Alcohol-related traffic fatalities and impaired driving statistics from the Michigan State Police
- Substance abuse treatment needs assessment data
- Statewide Synar data and local ASSIST project data on youth access to tobacco

In addition, the MDCH conducts an ongoing Behavior Risk Factor Survey (BRFS) of Michigan adults that routinely includes some information on alcohol use behaviors.

1.3 Contribution of the Current Study to Michigan's Statewide Prevention Needs Assessment Effort

In 1999, MDCH was awarded a contract by CSAP to conduct a project entitled, "Michigan State Prevention Needs Assessment Studies: Alcohol and Other Drugs." The project consists of a family of three separate but coordinated studies. The studies, which are listed in Exhibit 3, are designed to assess the need for and availability of substance abuse prevention services across the State. The studies were designed to inform and enhance the prevention planning process in Michigan.

Exhibit 3. Michigan's Prevention Needs Assessment Studies

Study 1.	Michigan Substance Abuse Risk and Protective Factors 2000/2001 Student Survey
Study 2.	Assessing Substance Use Prevention Needs in Michigan Counties: A Study Using Social Indicators
Study 3.	Assessment of the Current Prevention System (COMPSA)

This document reports on Study 2: Assessing Substance Use Prevention Needs in Michigan Counties: A Study Using Social Indicators. The purpose of this study is to help assess prevention needs at the local level using data already available from existing archival sources. The measures derived from these sources also are referred to as "social indicators."

The underlying premise of the social indicator study is that social, demographic, economic, and other characteristics of geographic areas are associated with substance abuse and that these characteristics (or indicators) are available through extant data sources. Some of these characteristics may be direct indicators of substance use and substance use-related problems in these areas, while others may be indicators of risk and protective factors that, in turn, are believed to increase or decrease, respectively, the likelihood of substance use behaviors and related problems. Data on these characteristics, when considered collectively, help to characterize geographic areas with respect to the nature and extent of their substance use problems and risk and protective factors that may be associated with substance use. Different geographic areas (e.g.,

Available information about counties and planning regions can be used to help characterize their particular substance abuse problems and risk factors, thus suggesting appropriate prevention strategies.

communities) are expected to have different types and/or varying levels of substance use, related problems, and risk and protective factors. When systematically assessed, this information can provide useful insights regarding the nature of substance use problems and prevention needs in specific areas and help to suggest different types of prevention services that are most appropriate for those needs.

The social indicator study will add considerably to the list of data elements currently available in Michigan that characterize substance use issues and prevention need at county and regional levels. As a result, those in the prevention community will be better able to base objectives and decisions on data-driven information. Of equal importance, the study will help to provide a context in which local archival data can be interpreted and used for documenting prevention needs and planning and/or targeting prevention services. As the State of Michigan moves increasingly toward a system in which regional and local prevention service providers must empirically demonstrate their needs and justify their programs, the data provided in this study will provide a valuable resource to inform this process.

1.4 Overview of Report Contents

The concept and purpose of social indicator approaches to substance abuse prevention needs assessment are introduced in Chapter 2 of this report. In Chapter 3, the data collection and analysis methodologies used for this study are described.

The heart of this report is a "Prevention Needs Assessment and Planning Profile" for each of Michigan's 83 counties which includes the display of 19 risk constructs comprised of one or more social indicators derived from archival sources. These data reflect various dimensions of substance use and substance use-related problems and outcomes that may exist in communities, as well as sociodemographic characteristics and vital statistics believed to be associated with substance use and the risk for and protection from substance use. The profiles have been designed to provide local planners and service providers with a concise, visual summary of each county's pattern of substance use-related indicators. The next chapter (Chapter 5) examines the statewide trend or pattern with regard to the risk construct scores and ranks presented in Chapter 4.

The heart of this report is the risk profile for each County, presented in Chapter 4.

The final chapter, Chapter 6, is devoted to issues regarding the application of social indicator data to prevention planning and includes recommendations for data dissemination in order to facilitate their effective use, as well as suggested strategies for potentially incorporating a social indicator approach into the State's prevention planning system. The recommendations build on the belief that the primary users of the data are at the local level and that the acceptance and input of these users are important for the long-term viability of a social indicator component to the State's prevention planning efforts.

The appendices provide detailed information on the sources of the indicator data and tables that contain indicator and risk construct values for counties and planning regions. Other supporting tables and documents also are included and referenced accordingly in the body of the report.

2. Purpose and Rationale for Study

2.1 Using Data to Inform and Enhance Planning Decisions

In recent years, Federal agencies have made a strong and concerted effort to encourage, or even require, recipients of Federal funds to use empirical data to document their needs, justify their planning decisions, guide their resource allocation, and assess their performance in achieving measurable objectives. Fortunately, there have been simultaneous advances in conceptualization and measurement in the field of prevention. These advances provide some useful approaches to assessing prevention services and needs and to evaluating the effectiveness of prevention services. The development and widespread use of the risk factor framework for understanding and preventing substance abuse has been particularly useful and important because it has identified risk and protective factors as key elements to be included in data-guided prevention planning and evaluation efforts.

The risk factor framework has been particularly important for developing data-driven approaches to prevention planning.

Good planning entails developing reasonable and appropriate models that specify the problems to be addressed and the approaches that will be used to address them. These are sometimes referred to as "logic models." They are a fundamental component of successful preventive interventions. Although logic models can be based solely on assumptions, they are immeasurably strengthened when their assumptions can be supported directly by objective data and credible findings from scientific research. Data on substance use problems help to prioritize goals and objectives for prevention programs and to justify and garner public support for prevention activities. Data on risk factors also can help to identify characteristics of the target populations that should be considered in selecting the types of prevention services most appropriate for that population. Services may either directly target those risk factors that are especially high in a certain area or population or seek to enhance factors that serve to protect against these elevated risk factors.

MDCH is committed to enhancing the prevention services it sponsors, and is considering integrating the development and implementation of data-guided logic models into the State and local planning process.

2.2 Understanding the Risk and Protective Factor Framework

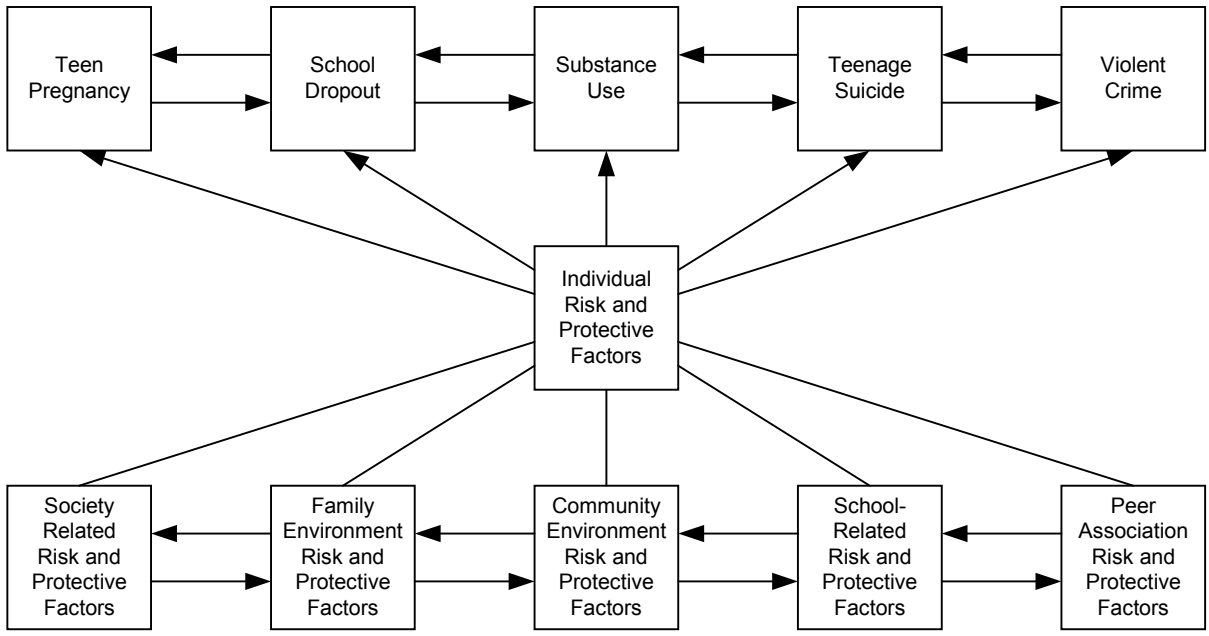
The risk and protective factor framework has assumed a prominent role in substance abuse prevention research and practice over the past two decades. Risk factors are characteristics of individuals or their environments that, when present, increase the likelihood that individuals will develop a disorder (e.g., use drugs) (Garmezy, 1983). Protective factors are characteristics that may reduce one's susceptibility to risk or prevent the initial occurrence of a risk factor (Coie et al., 1993). Because risk factors are precursors to substance abuse behaviors, reducing risk factors or protecting against them can prevent the occurrence of such behaviors. Therefore, risk-focused approaches to substance abuse prevention seek to reduce risk factors for substance abuse and enhance protective factors. Excellent presentations regarding the conceptual development, research, and application of the risk and protective

factor model are available in the literature (e.g., Hawkins et al., 1992; Institute of Medicine, 1994; National Institute on Drug Abuse, 1997).

A few aspects of the risk and protective factor framework are especially noteworthy and relevant to prevention planning and needs assessment. First, risk and protective factors include attributes of individuals and their social environments. Environmental influences can exist at the family, school, workplace, neighborhood, community, and societal levels. Persons exposed to multiple risk factors, and across multiple levels (or domains), are more likely to engage in substance use than those with fewer risk factors. This finding suggests that interventions to prevent substance use should focus on reducing multiple risk factors across all domains of influence. Those with multiple risk factors, and thus at highest risk, should be priority targets for prevention efforts (Hawkins et al., 1995).

Second, many undesirable behavioral outcomes, such as substance use, delinquency, teen pregnancy, and dropping out of school, share common risk factors. Successful interventions to reduce these common risk factors, or provide protection against them, may have benefits to society that go far beyond preventing drug use. This concept is illustrated in CSAP's web of influence model shown in Exhibit 4.

Exhibit 4. Web of Influence[1]



[1]Adapted from CSAP (1998).

Third, some risk factors are not likely to change as a result of preventive interventions (e.g., socioeconomic deprivation); others definitely cannot be changed (e.g., demographic characteristics such as gender). Such risk factors can, however, help to identify high-risk groups. Preventive interventions then can focus on enhancing protective factors to buffer individuals in these high-risk subgroups from the negative influence of risk factors.

Elevated risk factors are promising targets for preventive interventions.

Consistent with the risk and protective factor framework, this study has attempted to collect and present data that reflect the levels and the types of various risk and protective factors at the county level. The risk and protective framework suggests that those risk factors that are elevated and protective factors that are suppressed merit special attention and are promising targets for preventive interventions.

2.3 Rationale for a Social Indicator Approach to Prevention Needs Assessment

Application of the risk and protective factor framework to prevention planning relies on information regarding the levels of risk and protection in the areas and/or populations to be served. Social indicators provide one source of data that can be used for this purpose. Social indicator studies are particularly valuable because they bypass the high cost and time commitments, as well as many of the methodological weaknesses and impracticalities, associated with primary data collection. As an alternative or complementary approach, social indicators can help to characterize prevention needs for geographic areas by using extant data regularly collected for other purposes by government agencies and other organizations. As new archival data become available, these characterizations can be updated without incurring the costs of new primary data collection efforts and, thus, can form an important component of an ongoing data-driven approach to prevention needs assessment at the State and local levels.

Social indicators have been used for many years for both research and planning purposes.

Social indicator data gathered from archival sources have been used for decades to study and help characterize local areas such as States, cities, and even neighborhoods with respect to health and social issues and related attributes. In the 1940s, researchers from the University of Chicago demonstrated compelling linkages between social and economic characteristics of neighborhoods within Chicago and their rates of crime and violence (Shaw & McKay, 1942). Since then, social indicators also have been widely used to assess quality-of-life issues for local entities across the country. An example of such efforts regarding child health and safety is the Annie E. Casey Foundation's Kid's Count Data Books (e.g., the Annie E. Casey Foundation, 1999). Even more relevant to substance abuse are publications from the National Institute on Drug Abuse's (NIDA) Community Epidemiology Work Group (NIDA, 1998).

Many of the early applications of the social indicator approach to needs assessment were in the mental health area (see Cagle & Banks, 1986; Ciarlo et al., 1992; Warheit et al., 1977) and subsequently were applied to substance use treatment needs assessment (McAuliffe et al., 1993; Simeone et al., 1993). The underlying rationale of these efforts was to make use of existing data to indirectly gauge treatment needs in the absence of direct estimates (e.g., as might be obtained from surveys of the resident population). The primary objective of the studies has been to combine social indicators into an overall estimate of the treatment needs for

specific geographic units. Several approaches have been employed in these efforts, although they generally have shared common features such as the use of data-reduction techniques (e.g., factor analysis). Most also have used some external criterion to differentially weight and combine the indicators into a single-point estimate of substance abuse prevalence and/or substance abuse treatment needs.

For assessing prevention needs, the specific information about each risk or protective factor is viewed as being even more important than the overall estimate of prevention need. From the perspective of the risk and protective factor framework, the specific constellation of substance use behaviors and risk and protective factors is most useful in helping determine the nature of substance use problems in an area. Once the nature of the problem has been determined, the risk and protective factors that need to be addressed in order to reduce and prevent those problems can be identified. This focus on each risk and protective factor does not, however, mean that the overall risk of an area is of no use. A single, overall risk estimate can serve other purposes, such as enhancing community awareness and mobilization efforts and informing decisions about resource allocation.

Consideration of the entire constellation of risk constructs is useful for determining an area's prevention need.

Some States already have applied a social indicator approach to substance use prevention planning. These efforts have produced compendia of indicators, by county or by some other relevant geographic unit (e.g., Flewelling & Weimer, 1999; Flewelling & Weimer, 2000; Minnesota Department of Public Health, 1994; New York State Office of Alcoholism and Substance Abuse Services, 1996; Spencer, Kuo, & Flewelling, 2001; Stein-Seroussi, 1998; Zechmann et al., 1995). These documents provide useful information to planners regarding their areas' absolute and relative ranking on a number of outcomes related to substance abuse and an assortment of associated risk and protective factors. Such data are useful for identifying problems and detrimental conditions that are relatively severe and, thus, may be especially appropriate targets for prevention efforts. The value of such data can be enhanced if overlapping or redundant indicators can be combined or eliminated, thus reducing the total number of measures to be considered to a more manageable level. An assessment of the relative importance of each indicator with respect to predicting drug use and informing choices for drug use prevention strategies also would be useful.

To meet these challenges, a factor analysis approach was used to reduce the number of aggregate-level measures of risk to a statistically and conceptually manageable number of constructs that are not as highly intercorrelated as the original set of measures. Details regarding the approach are provided in the next chapter.

3. Data Collection and Analysis

3.1 Selection of Social Indicators

The archival indicators selected for this study were based primarily on constructs that appear on CSAP's list of validated indicators to be used by states in conducting needs assessment projects. Some of the CSAP indicators, however, were dropped from consideration for this report for various reasons, and a few indicators not on the list were added because of their conceptual appeal, availability for local areas in Michigan, and successful use in projects conducted in other States (Flewelling & Weimer, 1999; Flewelling & Weimer, 2000; Spencer, Kuo, & Flewelling, 2001). Reasons for not including certain CSAP-sanctioned indicators included lack of availability at the county level, redundancy with other indicators, and concerns about the validity of the data or usefulness of the indicator. The selected indicators were organized into 10 categories based on the CSAP categories and the general concepts that they appear to reflect. The 10 categories into which the archival indicators were organized, the specific indicators within each category, and the years for which archival data were collected are displayed in Exhibit 5.

3.2 Data Sources and Collection Procedures

The indicator data were collected by MDCH staff and obtained from a variety of State and Federal agencies. State data sources included the following.

- Center for Educational Performance and Information
- Department of Community Health, Division of Quality Management and Planning, Research and Evaluation Section
- Department of Community Health, Vital Records and Health Statistics
- Secretary of State Office
- Department of Consumer and Industry Services, Liquor Control Commission
- Department of Education
- Family Independence Agency
- Office of Labor Market Information
- State Police

Census data were also utilized for this study and obtained from the U.S. Census Bureau.

Indicators were abstracted from standard administrative and reporting data generated by the source agencies or downloaded from the Internet.

Most indicators selected for this study were abstracted from standard administrative and reporting data generated by the source agencies. As a result, we expect that the data collection procedures used to collect these indicators are validated and reliable. The frequency distribution of each indicator was examined, and indicators with unusual distributions or extreme values were noted and adjusted or dropped as necessary. Questions

Exhibit 5. Archival Indicator Categories, Variables, and Data Years

Archival Indicators	Data Years
A. Alcohol and Drug Abuse	
1. Juvenile arrest rate for alcohol violations	2000
2. Juvenile arrest rate for narcotics violations	2000
3. Adult arrest rate for alcohol violations	2000
4. Adult arrest rate for narcotic violations	2000
5. Adult arrest rate for driving while impaired (DUI)	2000
6. Percentage of fatal vehicle crashes in which alcohol was a factor	2000
7. Adult alcohol and drug treatment admission rate	2000
8. Juvenile alcohol and drug treatment admission rate	2000
B. Community Disorganization and Transition	
1. Percentage of residential properties that are renter-occupied	2000
2. Percentage of residential properties that are unoccupied	2000
3. Percentage adult population not registered to vote	2000
4. Percentage adult population not voting in presidential elections	2000
5. Rate of new residential building permits	2000
C. Community Crime	
1. Adult arrest rate for violent index crimes	2000
2. Juvenile arrest rate for violent index crimes	2000
3. Homicide rate	1997-1999
4. Adult arrest rate for property index crimes	2000
5. Adult arrest rate for other crimes	2000
6. Juvenile arrest rate for property index crimes	2000
7. Juvenile arrest rate for other crimes	2000
D. High Risk Demographic Subgroups	
1. Percentage of population that is male aged 15-34	2000
2. Population density	2000
E. Extreme Economic and Social Deprivation	
1. Percentage of persons living below poverty level	1998
2. Percentage of children living below poverty level	1998
3. Percentage of adults in the labor force who are unemployed	2000
4. Percentage of population participating in the Family Independence Program (FIP)	2000
5. Percentage of population receiving Food Stamps	2001
6. Percentage of students receiving free or reduced lunches	2000-2001
7. Percentage of adults without a high school diploma	2000
8. Median household income	1998
F. Alcohol and Tobacco Availability	
1. Alcohol licenses capita	2000
2. Tobacco retail outlets per capita	2000
3. Alcohol sales per capita	2000
G. Lack of Commitment to School	
1. High school dropout rate	1999-2000
H. Family Conflict and Management Problems	
1. Divorce rate	1997-1999
2. Percentage of children living in foster care	2000
3. Domestic violence arrest rate	2000
I. Adolescent Sexual Behavior	
1. Teen birth rate	1997-1999
2. Teen pregnancy rate	1997-1999
3. Juvenile sexually transmitted disease rate	2000
J. Suicide	
1. Adolescent suicide rate	1997-1999

concerning the definition of indicators, how the data were collected and compiled by the agency, and specific issues concerning the data received were clarified with the source agencies. Source agencies provided data as text files, Excel spreadsheets, or in hardcopy form. In addition, data also were copied or downloaded from the Internet. More details about the data sources and methodologies as well as concerns and limitations regarding the indicator data are provided in Appendix A.

3.3 Analysis Procedures

The following section outlines the analytical steps for creating the risk constructs and county profiles provided in Chapter 4.

Step 1: Calculating Rates or Percentages

As summarized in Exhibit 5, the most recent available year of data was collected for each indicator. In several cases, more than one year of data were collected. Most data collected for this study were counts of events (e.g., arrests) or persons (e.g., high school dropouts) for each available year. To make these numbers comparable across counties with different population sizes, a rate (e.g., the number of reported crimes per 1,000 persons) or percentage (e.g., percent of high school students who dropped out) was calculated. Each rate or percentage was based upon a numerator that reflects the number of events or persons of interest for a given year and a denominator that reflects the base upon which the rate or percentage is calculated. Only median family income is not defined as a rate or percentage. A multi-year rate or percentage was calculated for indicators in which multi-year data were available. Multi-year rates and percentages were calculated by summing the years of numerator data and dividing it by the sum of the years of denominator data, multiplied by the rate factor (e.g., per 1,000, etc.) Explicit definitions for all indicators used in this study are provided in Appendix A. Indicator rates and percentages by county can be found in Appendix B.

Step 2: Reducing the Number of Indicators by Defining Risk Constructs

Characterizations of counties based on the entire set of 41 indicators tend to be unwieldy and difficult to interpret. Many sets of indicators, especially within the initial 10 groups, also are expected to be moderately, if not highly, interrelated and thus somewhat redundant. To reduce the number of social indicators to a more meaningful and manageable number, a factor analysis procedure was used. Factor analysis is a statistical tool used to determine the number of relatively independent dimensions, or factors, that exist within a set of measures. In the process, the analysis also helps to identify groups of variables that are highly interrelated and, thus, can be viewed as multiple indicators of a single underlying construct.

To make the data more comparable across counties, either a rate or percentage was calculated for each indicator. A factor analysis procedure was used to reduce the entire set of 41 indicators into a more meaningful and manageable number.

As shown in Exhibit 5, indicators were grouped into 10 conceptual categories prior to conducting factor analysis. A separate principal factor analysis was conducted on the county-level indicators within each of the 10 categories. Ideally, the factor analysis results would indicate that each category contained only one underlying factor (i.e., that all the indicators within that category would be moderately, if not highly, interrelated), although it was anticipated

that the analysis would actually reveal several factors for at least some of the categories. This was, in fact, the case. Presented in Exhibit 6 is a description of the factors, or risk constructs, that were identified within each of the 10 original categories. Each risk construct (i.e., factor) is characterized, or labeled, according to the types of indicators that loaded (i.e., were correlated) highly on that particular factor.

The table shows, for example, that four distinct factors were identified from the group of indicators representing alcohol and drug abuse. This is an interesting finding because it suggests that many types (or measures) of substance abuse problems in counties are not highly interrelated. In other words, substance abuse appears to be a multidimensional problem because certain types of substance abuse problem indicators (e.g., arrests for drug law violations) are not highly related to other indicators (e.g., arrests for liquor law violations). This lack of correlation between some indicators also could be a reflection of different measurement and reporting practices or priorities across counties, as opposed to a true lack of association between underlying constructs (e.g., illicit drug use and alcohol abuse).

Exhibit 6 also shows the "component" indicators comprising each risk construct measure within each of the 10 initial groupings. For example, the lack of civic involvement construct is primarily a reflection of 2 specific indicators – the percentage of unregistered voters and the percentage of adults who did not vote in presidential elections. As the remainder of the table indicates, the number of factors, or risk constructs, that emerged from each original grouping ranged from 1 to 4, yielding 19 constructs overall.

Based on the factor analysis, 19 risk constructs comprised of 1 or more indicators were identified.

Because the purpose of the factor analysis was to identify subsets or risk constructs the were not highly correlated with each other, but that were each composed of highly intercorrelated indicators, it is important to examine the success of the factor analysis in accomplishing this. As a result, Exhibit 7 provides several statistics that are useful in assessing the success of the factor analysis procedure in regrouping indicators into more meaningful subsets. The first column presents the average correlation for all possible pairs of indicators within each of the 10 categories. For example, the indicators within the socioeconomic deprivation group were found to be highly correlated with one another (.70). The second column shows the average correlation for all possible pairs of indicators comprising each risk construct. For example, the indicators comprising the community transition and mobility construct were moderately correlated with one another (.60). As expected, the correlations among indicators comprising the risk constructs were usually and often substantially higher than the correlations among indicators within the original groupings. The last column presents the correlation between the standardized risk constructs within each of the original 10 groupings. Most constructs within each grouping were not highly correlated with each other. Although the risk constructs within the adolescent sexual behavior category (teen pregnancy and births and juvenile sexually transmitted disease) and the constructs within the community crime category (violent crime and non-violent crime) showed a high correlation, they were considered to be sufficiently distinct, both conceptually and statistically, to be retained as separate constructs.

Because each of the 10 categories was factor-analyzed separately, strong associations still could have existed between constructs from different categories. Examination of the intercorrelations among constructs confirmed that further consolidation of the constructs was possible. However, further consolidation appeared to detract from significant conceptual distinctions between the constructs that were important to maintain. For example, the juvenile

sexually transmitted disease construct had a high correlation with the urban environment construct (population density). Retaining these constructs as distinct measures, however, was viewed as a useful feature of the study and consistent with its objectives. A table showing the intercorrelations among all 19 constructs is provided in Appendix D.

Exhibit 6. Risk Constructs Based on Factor Analyses

Risk Construct	Construct Label	Component Indicators
A. Alcohol and Drug Abuse		
1. Liquor law violations	STLIQLAW	A1. Juvenile arrest rate liquor law violations A3. Adult arrest rate liquor law violations A5. Adult DUI arrest rate
2. Alcohol-related vehicle fatalities	STFATALS	A6. Percentage of fatal vehicle crashes in which alcohol was a factor
3. Drug law violations	STDRGLAW	A2. Juvenile arrest rate for narcotic violations A4. Adult arrest rate for narcotic violations
4. Substance abuse treatment admissions	STTREAT	A7. Adult alcohol and drug treatment admission rate A8. Adult alcohol and drug treatment admission rate
B. Community Disorganization and Transition		
1. Lack of civic involvement	STCIVIC	B3. Percentage unregistered voters B4. Percentage of adults who did not vote in presidential elections
2. Community transition and mobility	STMOBILE	B1. Percentage renter occupied housing B2. Percentage of vacant housing units B5. Rate of new residential building permits
C. Community Crime		
1. Violent crime	STVIO	C1. Adult arrest rate for violent crime C2. Juvenile arrest rate for violent crime C3. Homicide rate
2. Non-violent crime	STNONVIO	C4. Adult arrest rate for property crime C5. Adult arrest rate for other crime C6. Juvenile arrest rate for property crime C7. Juvenile arrest rate for other crime
D. High Risk Demographic Subgroups		
1. Young males	STMALES	D1. Percentage of population that is male aged 15 to 34
2. Urban environment	STURBAN	D2. Population density
E. Extreme Economic and Social Deprivation		
1. Socioeconomic deprivation	STPOV	E1. Percentage of population living below poverty level E2. Percentage of children living below poverty level E3. Unemployment rate E4. Percentage of population participating in FIP E5. Percentage of population receiving Food Stamps E6. Percentage of students receiving free or reduced lunches E7. Percentage of adults without a high school education E8. Median family income
F. Alcohol and Tobacco Availability		
1. Alcohol and tobacco permits/outlets	STALCPER	F1. Alcohol permits per capita F2. Tobacco outlets per capita
2. Alcohol sales	STSALES	F3. Alcohol sales per capita

Exhibit 6. (continued)

Risk Construct	Construct Label	Component Indicators
G. Lack of Commitment to School		
1. Dropouts	STDRPOUT	G1. Dropout rate
H Family Conflict and Management Problems		
1. Family discord	STFAMDIS	H2. Percentage of children living in foster care H3. Domestic violence arrest rate
2. Divorce	STDIVORC	H1. Divorce rate
I. Adolescent Sexual Behavior		
1. Teen pregnancy and births	STBIRPRG	I1. Teen birth rate I2. Teen pregnancy rate
2. Juvenile sexually transmitted disease	STSTD	I3. Juvenile STD rate
J. Suicide		
1. Adolescent suicide	STSUICID	J1. Adolescent suicide rate

Two alternative ways of measuring each risk construct also were considered. One such approach would have been to use the factor score for each factor rather than a composite of the most highly loading individual indicators. The factor score is a weighed combination of all indicators, with the weights roughly proportional to the factor loadings. We believe that our approach of using factor analysis to combine indicators that loaded highly on a particular factor into risk constructs is conceptually more appealing and helps to simplify the interpretation of the risk construct scores. The second alternative approach would have been to select a single indicator, based on the factor analysis results, to represent each construct. Selection of a single indicator to represent each construct, as used in the State of Vermont (Spencer, Kuo, & Flewelling, 2001), also has great conceptual appeal because it simplifies interpretation and significantly reduces the volume of data needed for subsequent analysis and future updates to the social indicator database. This approach may be reasonable in subsequent years. Because the data for all the indicators were already available for this study, however, it was decided to make maximum use of them by incorporating all the indicators that loaded highly on each factor into the risk construct definitions.

Step 3: Computing Risk Construct Scores

A main feature of the risk profiles presented in Chapter 4 is that they provide for each county a graphic display of its levels of risk factors and problems related to substance misuse, relative to the average across all counties (or State average). A statistical procedure termed "standardization" was performed to create these relative measures. Standardized values for each indicator comprising a risk construct were calculated for each county by subtracting the State average value from the county value and dividing by the standard deviation. This procedure produced new values of the indicators that have a mean of zero and a standard deviation of 1.0, regardless of the original units of measurement. Most indicators were defined such that higher values reflected greater levels of substance use, substance use-related problems, and risk for substance use. For example, indicators based on voter registration were defined as the percentage of unregistered voters. This was done in order to ensure that higher profile scores always indicate greater risk and lower values always indicate less risk, thus facilitating interpretation of the profiles. The indicator for median income was the only exception. The general assumption was that the lower the income the more at risk for drug use. Therefore, it was necessary to reverse-code standardized scores for median income so that higher values were indicative of higher expected risk and lower standardized values were indicative of lower risk.

Exhibit 7. Mean Pairwise Correlations of Indicators within Risk Constructs and Groupings

Risk Construct	Mean Inter-Correlation of Indicators within Each Grouping	Mean Inter-Correlation of Indicators Comprising Each Risk Construct	Mean Inter-Correlation of Risk Constructs within Each Grouping
A. Alcohol and Drug Abuse	0.23		0.14
1. Liquor law violations (3)		0.65	
2. Alcohol-related vehicle fatalities (1)		--	
3. Drug law violations (2)		0.32	
4. Substance abuse treatment admissions (2)		0.63	
B. Community Disorganization and Transition	0.42		0.12
1. Lack of civic involvement (2)		0.76	
2. Community transition and mobility (3)		0.60	
C. Community Crime	0.45		0.66
1. Violent crime (3)		0.58	
2. Non-violent crime (4)		0.36	
D. High Risk Demographic Subgroups	0.08		0.08
1. Young males (1)		--	
2. Urban environment (1)		--	
E. Extreme Economic and Social Deprivation	0.70		--
1. Socioeconomic deprivation (8)		0.70	
F. Alcohol and Tobacco Availability	0.44		0.22
1. Alcohol and tobacco permits/outlets (2)		0.90	
2. Alcohol sales (1)		--	
G. Lack of Commitment to School	--		--
1. Dropouts (1)		--	
H. Family Conflict and Management Problems	0.21		0.05
1. Family discord (2)		0.37	
2. Divorce (1)		--	
I. Adolescent Sexual Behavior	0.85		0.80
1. Teen pregnancy and births (2)		0.95	
2. Juvenile sexually transmitted disease (1)		--	
J. Suicide	--		--
1. Adolescent suicide (1)		--	

Construct scores then were computed by averaging the standardized values of each indicator comprising the risk construct (i.e., summing across the standardized values and dividing by the number of indicators comprising the construct). For example, the standardized values for the adult drug law violation arrest rate and the juvenile drug law violation arrest rate were added together and divided by two in order to get the risk construct score for drug law violations. Thus, each risk construct measure represents the number of standard deviation units a county's value lies away from the mean value across all counties, which is zero. By defining the construct values in this manner, each risk construct measure implicitly provides a comparison between the county and the mean value across all counties or the State average. In addition, because all of the standardized indicators and risk constructs were converted to the same scale, comparison across the indicators and constructs to identify those that are unusually high or low is facilitated. Because standardized scores of less than -3.0 or greater than 3.0 were uncommon, those values were rounded to -3.0 and 3.0, respectively. The 83 county

profiles, as well as additional guidance for interpreting the profile data, are provided in Chapter 4.

In addition to computing the 19 individual risk construct scores by county, an overall risk index for each county was created. Because the measures for the 19 constructs are in standardized form, they could be combined directly without concern for differences in their original units of measurement. The overall risk index, therefore, was defined as the mean value of the 19 risk constructs. It provides a measure of the overall level of substance abuse problems and risks in each county, relative to other counties in the State. However, one limitation of the index is that each risk construct contributes equally to the calculation of the overall risk index value (i.e., each construct implicitly receives a weight of one). Because there is overlap among the constructs, and some might be stronger or more significant indicators of risk than others, differentially weighting the constructs might produce a more accurate overall score. At this time, however, there is no concensus about how these differential weights should be developed. A second limitation is that a number of other indicators of substance abuse problems (e.g., mortality and mobility measures) were not included in this analysis of prevention-oriented indicators identified by CSAP. Incorporating other indicators could have major effects on relative rankings across counties. For additional information, regional construct scores are provided in Appendix E and regional overall risk scores are provided in Appendix F.

Indicator rates and percentages were standardized and construct scores were computed by averaging the standardized values of each indicator comprising the risk construct. Each risk construct represents the number of standard deviation units a county's value lies away from the State average.

Step 4: Ranking Individual Risk Constructs and Overall Risk Index

In order to allow for further comparisons by the risk construct scores and overall risk index, each construct score and the overall risk index were ordered from lowest to highest and ranked. Counties with high rankings by risk constructs are at highest risk for that particular construct whereas counties with low rankings are at lower risk. Similarly, counties with high rankings on the overall risk index are viewed as having higher overall levels of substance use problems and risk factors for substance use than counties with lower rankings. Rankings by risk construct and overall risk index are included on the county profiles in Chapter 4. In addition, a map depicting how the overall risk scores across counties in Michigan are distributed geographically is included in Chapter 5. Regional construct ranks are provided in Appendix G and regional overall index ranks are provided in Appendix H.

3.4 Data Limitations

Several important limitations with the archival data used in this report are noted below.

1. *Archival data primarily are indicative of risk factors*. As mentioned above, the categories of archival indicators that were used in this study stem from individual-level research pertaining to risk and protective factors predictive of substance abuse. It is important to note that, because archival data generally focus on problems and services, archival-based measures of protective factors are less prevalent. To illustrate, a direct archival measure does not seem to exist for attachment or bonding of children to their parents (a

protective factor), although this concept is presumably reflected to some extent by indicators such as the percentage of children living in foster care (a risk factor). Thus, the archival indicators collected for this study, as in most social indicator studies, are indicative of risk factors rather than protective factors.

2. *Community archival data cannot address the full range of risk factors*. Some of the risk factor constructs originally identified in the individual-level research (i.e., self-esteem, association with deviant peers) do not have directly analogous measures available at the aggregate level (e.g., county), especially in the form of archival data. Although it is clear that archival measures cannot capture the full range and extent of risk factors that can be measured at the individual level, some archival data may be able to serve as proxy measures. For example, the availability of alcohol and other drugs at the individual level is assessed most commonly by asking survey respondents about their perceptions of how easy or difficult it is to obtain certain substances. These data, however, are not readily available as archival data. Because alcohol can only be sold by establishments with liquor permits, it should logically be more plentiful in areas with a higher number of alcohol permits. Hence, alcohol licenses per capita was identified as a proxy measure for the availability of alcohol, recognizing that other factors contribute to the availability of alcohol that are not picked up in this measure. More work is needed on evaluating the validity of social indicators as they relate to youth substance use and risk for substance use, and it should be recognized that they may interact differently in different states.

3. *Archival data do not always capture the full meaning of what they are intended to measure*. An important feature of archival data is that official statistics do not always capture the full extent or meaning of the underlying construct for which they are being used as proxy measures. Many events that define the indicators either go unreported or are classified as something else. This is problematic because the factors that influence nonreporting and misclassification vary by time and place. For example, heightened awareness or sensitivity to a problem may lead to higher rates of reporting, even though the underlying incidence of the problem has not changed. Some indicators, such as crimes, may be influenced as much by the capacity and resources of the agencies involved as by the extent of the problem being addressed by these agencies. Other reasons for inconsistencies may be more technical in nature, such as changes or differences in definitions and reporting practices, missing data due to failure to submit reports, or coding errors.

4. *Research regarding the correspondence between social indicators and actual levels of substance use and related problems in a community is still sparse*. Although there was clear conceptual justification for the choice of indicators included in this report, and most have received some level of empirical support, some connections are more tenuous than others. For reasons related to many of the limitations described in this chapter, it is certain that indicators will vary in their degree of association with actual levels of substance use or abuse, and some may even have no association or an inverse association with adolescent substance use when analyzed at the

county level. For example, many of the available archival indicators pertain to the entire population (not adolescents specifically) and, therefore, may be limited in the extent that they reflect substance use and risk for substance use by youth. The analyses presented in Chapter 4 offer some guidance as to the relative importance of the social indicators with respect to substance use behaviors and other health risk behaviors.

5. *Data have been collected for other purposes*. The data for this study were obtained from a wide variety of sources. The source agencies often collect these data for their own purposes and for purposes unrelated to prevention needs assessment. The indicators derived from these data sometimes may be subject to biases or distortions, changes in definitions or data collection procedures, and other nuances that affect their interpretation. Problems or inconsistencies in the measures can hamper comparisons across counties, as well as across years. Such problems are not always readily apparent or resolvable. Despite efforts to identify and address questions about the data, some indicators still may contain significant sources of bias or error that could not be readily discerned at the time this report was prepared. As the data in this report are used, and as the database may be updated in the future, it is likely that various problems and concerns with specific indicators, either in general or for specific counties and years, will be identified. Keeping track of these issues and seeking ways of improving the validity and consistency of the data whenever possible will be important. Information about the data sources are provided in Appendix A.

6. *Diversity within counties may be masked by aggregated data*. Many counties in Michigan are relatively small, both geographically and in terms of population. Even so, it is important to remember that the indicators presented in this report represent average, or overall, values for each county and that the population and levels and types of substance abuse and risk factors for substance abuse typically are diverse, even within counties. Thus, prevention approaches that appear to be consistent with a county's social indicator profile will not be equally pertinent to all communities or various other types of population subgroups within the county.

4. County Prevention Needs Assessment and Planning Profiles

This chapter provides the Prevention Needs Assessment and Planning Profiles. A standardized value is plotted for each risk construct to facilitate comparison across the indicators and between the county and the average observed for all counties. The indicators that comprise each risk construct are also presented, as well as the counties' rank by risk construct and overall risk (a rank of 1 indicates lowest risk). The profiles are organized alphabetically by county name.

4.1 Guidelines for Interpreting the Profiles

The profiles may be used to characterize counties in Michigan with respect to their levels of alcohol- and drug-related problems and various suspected risk and protective factors for these problems. The profiles can serve to stimulate discussion and focus community attention on local substance use issues and the reasons for the patterns observed in the profiles. The information contained in the profiles also can be helpful to prevention planners in determining appropriate prevention strategies and target groups. As the data for any particular county are reviewed, it is important to consider the following:

1. *Actual values of all indicators for the county should first be examined*. Users of these data should first ask whether these values are consistent with other information they have about the county, or if the data might be distorted by the possible biases or limitations discussed earlier in this report. In addition, many of the risk constructs are composite measures based on 2 or more indicators, making examination of the individual indicator data important. It also may be useful to examine the values for geographically adjacent counties to determine if regional patterns to the findings exist.

2. *Indicators for which a county has extremely high or low values relative to the average across all counties should be examined*. As described in Chapter 3, the risk constructs (based on archival indicators) were converted to standardized values, such that zero for any risk construct represents the mean value of all counties in the State. The scores represent the number of standard deviation units a county's value lies away from that mean for the indicator. As a general rule of thumb, most (about 68 percent) of the standardized scores for any given indicator will lie between -1.0 and 1.0, and these scores therefore are considered typical. Scores between -1.0 and -2.0, or between 1.0 and 2.0, constitute about 27 percent of all scores and thus are somewhat uncommon. Scores lower than -2.0 or higher than 2.0 make up the final 5 percent and therefore are rare. Although the actual percentages vary somewhat depending on the shape of the distribution for each indicator, this general distribution suggests that indicators with a score less than -1.0 or greater than 1.0 may merit particular attention.

   All indicators are presented such that the higher standardized values (i.e., values to the right of the center line) reflect greater substance use, substance use-related problems, and risk for substance use, relative to other counties. For example, a

positive standardized score less than 1.0 for liquor law violations would indicate that a county has a *slightly* higher rate of this type of crime compared to the average of all counties in the State. A standardized score between -1.0 and -2.0 for the same indicator would indicate that a county has a *noticeably* lower rate of liquor law violations compared to the overall average. A standardized score between 2.0 and 3.0 would indicate that the county has an *unusually* high rate compared to the average of all counties.

Users of these data should first ask if extreme standardized values are consistent with other information they have about the county or if there might be aberrations due to possible data biases or limitations. As with the actual values, it also may be useful to examine the standardized values observed for geographically adjacent counties to determine if regional patterns to the findings exist. Although standardized scores are useful, it is important to keep in mind that they are relative measures and only provide partial information about the potential prevention needs of a county. An indicator that is not highly problematic relative to the overall county average should not be discounted necessarily when considering the prevention needs for a given county. For example, even though the high school dropout rate in a certain county is no higher than the average, it may still warrant interventions designed to reduce it further.

3. *Profile data should be used to inform the identification of appropriate and effective prevention strategies in conjunction with other sources of information*. The profiles may provide some important clues about the types of approaches that are most needed and most appropriate in a given county. However, there is no proven or exact formula for identifying the most appropriate and effective prevention strategies based on an area's profile. In general, it is recommended that problems, elevated risk factors, and suppressed protective factors be given extra attention in determining which types of prevention strategies are most needed for a given area. High levels of specific substance abuse problems (e.g., driving while impaired) or problems related to substance use (e.g., teen pregnancy) may suggest that strategies aimed directly at reducing those outcomes are warranted. The same logic applies to elevated risk factors or suppressed protective factors. For example, in counties where lack of commitment to school is low, giving priority to school-based programs and policies may be warranted. Other indicators may be less directly suggestive of any particular prevention strategies (e.g., high levels of socioeconomic deprivation) but still are useful for describing the target population, identifying prominent high-risk subgroups, and stimulating consideration of the types of approaches that are most appropriate and effective with that population.

Careful consideration of multiple data sources is needed to effectively assess prevention needs.

Decisions about which indicators are more important and in need of attention for any given area should include a consideration of not only whether the county's scores are high or low relative to other counties in the State, but also the number of individuals affected by the factors and the changes observed in the factors across years. And, though not available for this study, the strength of the risk and protective factors as predictors of substance use prevalence should also be considered. These types of information all relate to describing the nature and extent of the substance use problem in a community, along with characteristics of the community's

population and various risk and protective factors that may influence substance use levels in that community.

In addition, however, even when the indicator data are helpful in suggesting appropriate approaches or foci for prevention efforts, the choice of which specific strategies or programs to implement will likely require additional consideration based on different types of information. In particular, prevention planners will want to consider what prevention programs or strategies are known to be effective for the type of application they have in mind. They also may need to examine the prevention resources and capabilities in the community, or nearby communities, in order to make equitable and effective use of the limited prevention resources that are available. These additional considerations go beyond the specific focus of this report, but they are important components in an overall framework for prevention planning at the state and local level. Some additional comments on the role of social indicator data within a broader planning framework are discussed in Chapter 6.

5. Overall Risk Score and Risk Rank by County

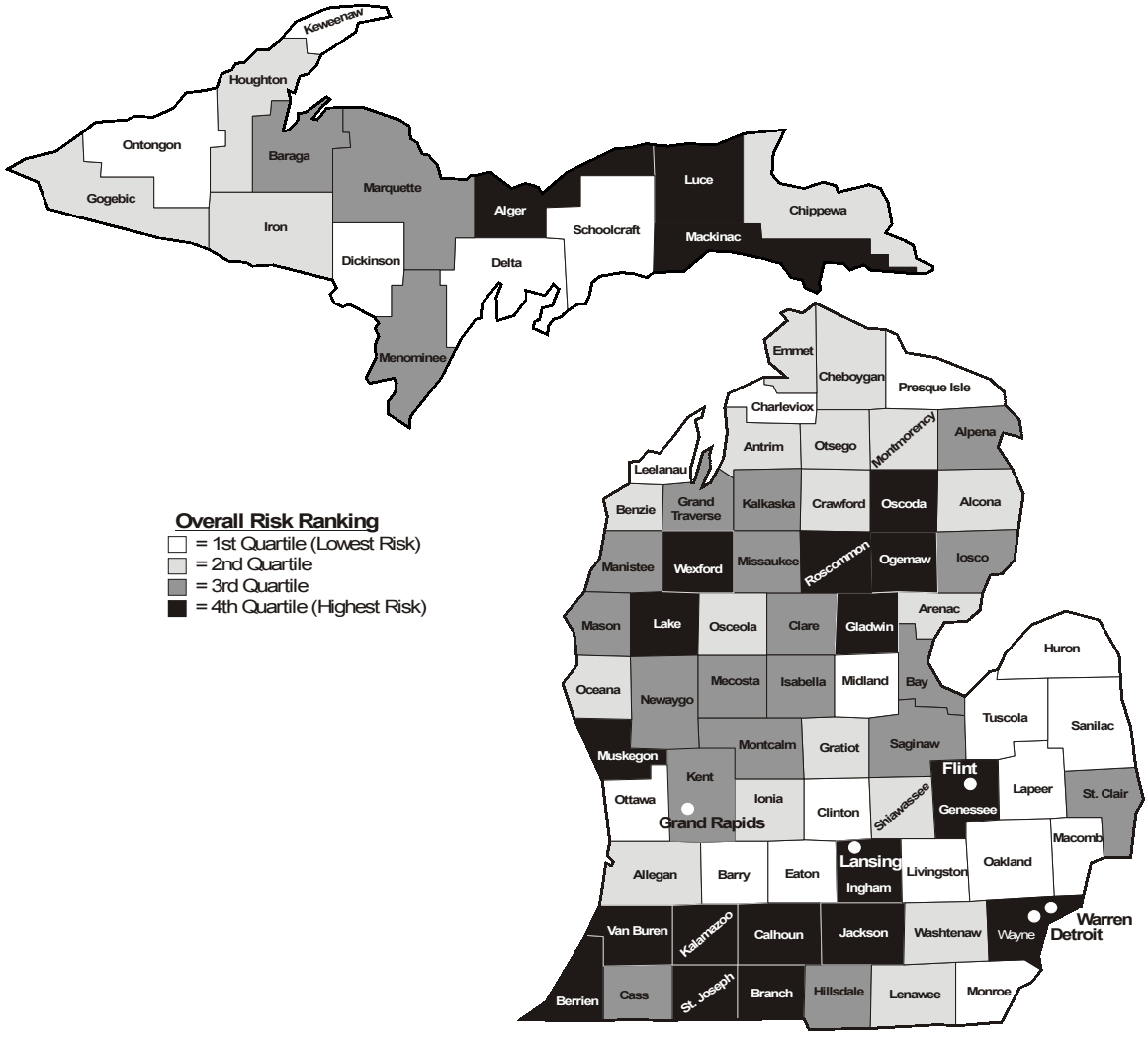
Each county's overall risk score rank was included on the risk profiles in Chapter 4. The actual overall risk scores by county are presented in Exhibit 8. Regional overall risk scores are provided in Appendix F. As described in Chapter 3, the overall risk scores are based on the average value of all 19 risk constructs, equally weighted. These scores were then ordered from lowest to highest and ranked. In order to examine possible trends across the state, the overall risk scores were grouped into quartiles. The first group or quartile was assigned a value of 1 indicating lowest risk, the second group a value of 2, and so on. This grouping depicts four levels, or gradations, of overall risk. Counties with high rankings are viewed as having higher overall levels of substance use problems and risk factors for substance use than counties with lower rankings.

Exhibit 8. Overall Risk Score by County

County	Overall Risk Score	County	Overall Risk Score	County	Overall Risk Score
Alcona	-0.43	Gratiot	-0.49	Missaukee	0.24
Alger	0.75	Hillsdale	0.40	Monroe	-1.35
Allegan	-0.46	Houghton	-0.13	Montcalm	-0.10
Alpena	0.41	Huron	-1.56	Montmorency	-0.53
Antrim	-0.51	Ingham	1.09	Muskegon	1.11
Arenac	-0.27	Ionia	-0.11	Newaygo	0.03
Baraga	0.08	Iosco	0.06	Oakland	-0.93
Barry	-0.71	Iron	-0.42	Oceana	-0.55
Bay	0.13	Isabella	-0.01	Ogemaw	0.99
Benzie	-0.39	Jackson	0.65	Ontonagon	-1.62
Berrien	1.52	Kalamazoo	0.75	Osceola	-0.24
Branch	0.85	Kalkaska	0.37	Oscoda	1.20
Calhoun	1.06	Kent	0.15	Otsego	-0.17
Cass	0.02	Keweenaw	-0.87	Ottawa	-0.76
Charlevoix	-1.26	Lake	2.00	Presque Isle	-0.68
Cheboygan	-0.14	Lapeer	-1.11	Roscommon	1.41
Chippewa	-0.12	Leelanau	-1.86	Saginaw	0.41
Clare	0.57	Lenawee	-0.42	Sanilac	-0.34
Clinton	-1.78	Livingston	-2.18	Schoolcraft	-0.82
Crawford	-0.61	Luce	2.00	Shiawassee	-0.92
Delta	-1.29	Mackinac	1.40	St. Clair	-0.19
Dickinson	-0.76	Macomb	-0.82	St. Joseph	0.55
Eaton	-1.68	Manistee	0.20	Tuscola	-0.69
Emmet	-0.14	Marquette	0.23	Van Buren	0.98
Genesee	0.90	Mason	0.21	Washtenaw	-0.22
Gladwin	0.85	Mecosta	0.64	Wayne	3.0
Gogebic	-0.41	Menominee	0.29	Wexford	2.55
Grand Traverse	-0.04	Midland	-0.84		

A map depicting how the overall risk scores across counties in Michigan are distributed geographically is provided in Exhibit 9. The patterns depict some noteworthy geographic clustering of counties with high and low levels of risk. Counties in which the largest cities are located fall in the 2 highest risk categories. In addition, the southern and central portions of the lower peninsula have clusterings of counties with high risk, while the eastern section has a cluster of counties with low risk. The upper peninsula's clustering isn't as patterned, though counties with high risk tend to border other counties with high risk.

Exhibit 9. Map of Overall Risk Rank by County



6. Applying and Sustaining a Social Indicator Approach to Prevention Planning in Michigan

Guidelines for interpreting the social indicator profiles, and for making prevention planning decisions based on the profiles, were provided in Chapter 4. Those guidelines emphasized that there are no rigid rules or formulas for how profile data should be translated into program planning decisions. Rather, some general principles, along with some cautions, were presented with respect to how the data might best be used for this purpose. Different communities may focus on different aspects of the data and interpret them in ways that seem most useful and appropriate for those communities. All communities are encouraged to combine the profile data with local knowledge and other available information in order to form a more comprehensive assessment of their substance use problems and prevention needs.

6.1 Suggestions for Data Dissemination

The primary objective of this report is to provide information that informs the planning and provision of prevention services at the local level.

By design, the greatest potential value of the data in this report will be achieved when in the hands of local prevention providers, planners, and policymakers. Although the data may serve several important functions at the State level, the planning and provision of prevention services in Michigan is largely orchestrated at the regional and local level. Therefore, the primary objective of this report is to provide information that can inform this process.

Regional prevention staff, coalition coordinators, and directors and staff of community-based organizations all are potential users of these data. In addition to informing the planning process, the data can be useful for focusing public attention on substance use problems, risk factors, and potential solutions; at the same time, they may stimulate a greater interest in and understanding of data-driven approaches to assessing prevention needs in communities. The data also can be helpful in applications for prevention resources for which statements of need are a required component. Because of the breadth of indicators assembled in this report and their relevance to many facets of social well-being, the potential audience may extend beyond the substance use prevention community and include other social services agencies and community-based organizations, public officials, businesses, and the general public.

Some government agencies and research organizations historically have been reluctant to share data with the public until the data have been painstakingly reviewed and validated and until every nuance of the data and how the data might be interpreted, or misinterpreted, has been examined and documented. In contrast, a major objective of releasing this report is to encourage scrutiny of the data by local providers and planners and to invite interpretation that can be informed and guided by local knowledge of the communities being assessed. Ultimately, a collaborative partnership between the State and local users of the data is viewed as the best approach for ensuring the accuracy, utility, and long-term viability of a standardized social indicator reporting system.

6.2 Recommendations for Using and Sustaining Social Indicators as a Component of the State's Prevention Planning Infrastructure

Systematic compilation and use of social indicator data to inform prevention planning efforts is still a relatively new endeavor. How helpful this approach can be in the State's substance use prevention planning process has yet to be determined. Some preliminary impressions from other States are very encouraging, especially with respect to the ability of local data to focus and energize attention to prevention-related issues within the community.

It seems entirely likely that social indicators in some form or another will continue to occupy an important niche in the State's efforts to support a data-driven approach to social service needs assessment and planning efforts. CSAP has adopted this perspective; it now requires the completion of a social indicator study as a core component of all new State prevention needs assessment projects it funds. It is hoped that this particular report will be helpful in further establishing the credibility and utility of social indicator approaches to prevention needs assessment, thus providing support for continued development and maintenance of a social indicator component in state planning systems.

Exhibit 10 provides several recommendations for how MDCH can help support and sustain the use of social indicators for prevention planning.

Exhibit 10. Recommendations for Alcohol, Tobacco, and Other Drugs (ATOD) DA Use and Maintenance of the Social Indicator Study

Recommendation	Comments
Review the report for its utility to the State.	It is recommended that the report be reviewed by MDCH's decision makers and key prevention staff for its relevance to the State's prevention planning process and for possible adaptations for continued use. Representatives from other State agencies also may be interested in reviewing the report and providing comments.
Disseminate the report to the regional prevention providers and community coalition coordinators and gauge their interest in and use of the report.	These individuals are the ultimate users of the information. Their buy-in is essential to the effective use of social indicator data for local planning purposes. These users can provide insights regarding ways to improve the data and the manner in which they are presented. Future possibilities might include online access to the report.
Provide training to potential data users on the interpretation and use of the profiles.	It may be helpful to provide further guidance on the meaning and interpretation of the prevention needs assessment and planning profiles as well as their design and use. Ideally, this training also would include the consideration of other data sources (particularly the Assessment of the Current Prevention System in Michigan in this family of studies) and how they can be integrated into the planning process.
Consider modifications to the list of indicators and the manner in which indicators are defined and displayed, based on both user input and further research regarding their validity.	It is likely that additional useful indicators will be identified, and some current indicators will be determined to be of relatively little relevance. A number of other methodological features might merit consideration, including comparisons among subgroups of demographically similar counties and the inclusion of regional or national comparison data.

Exhibit 10 (continued)

Recommendation	Comments
Define the role for social indicators in the State planning process.	The manner in which social indicator data can be formally incorporated into the State planning process will need to be considered. This could vary from simply suggesting that local planners and providers use the data to requiring their use in justifying service plans and using the data as a basis for making resource allocation decisions. Ultimately, the use of the social indicator data should be incorporated within a broader planning framework that includes other types of needs assessment data as well.
Commit to a permanent and sustainable infrastructure and support system.	In order to sustain the social indicator study as a core component in the State's prevention planning process, an appropriate infrastructure and means of support will need to be established. One possibility would be to contribute to the development of a coordinated social indicator system that would meet the needs of multiple units within the State's health and social service agencies.

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Appendix A
Data Sources and Documentation

This appendix describes the indicator definitions, data years, and data sources. The indicator data used for the analyses described in this report were obtained from a variety of sources in July and August 2002. In some instances, a source agency provided data for more than one indicator. Data were collected primarily by MDCH and sent to RTI for cleaning, management, and analysis. In most cases, data were collected for the year 2000 only. Table A-1 summarizes the indicator data included in the analyses for the development of the county profiles.

Table A-1. Indicator Definitions, Data Years, and Sources

Indicator	Definition and Data Years	Source
Juvenile arrest rate for alcohol violations	**Definition**: Arrests for alcohol violations (DUI, liquor law violations, drunkenness), per 1,000 juveniles ages 10 to 17. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/ 0,1607,7-123-1645_3501_4621-26742--,00.html
Juvenile arrest rate for narcotics violations	**Definition**: Arrests for narcotic violations (possession, sale, use, growing, and manufacturing), per 1,000 juveniles ages 10 to 17. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/ 0,1607,7-123-1645_3501_4621-26742--,00.html
Adult arrest rate for alcohol violations	**Definition**: Arrests for alcohol violations (liquor law violations, drunkenness), per 1,000 adults ages 18 and older. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/ 0,1607,7-123-1645_3501_4621-26742--,00.html
Adult arrest rate for narcotic violations	**Definition**: Arrests for narcotic violations (possession, sale, use, growing, and manufacturing), per 1,000 adults ages 18 and older. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/ 0,1607,7-123-1645_3501_4621-26742--,00.html
Adult arrest rate for driving while impaired (DUI)	**Definition**: Arrests for driving under the influence, per 1,000 adults ages 18 and older. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www.michigan.gov/msp/ 0,1607,7-123-1645_3501_4621-26742--,00.html

Indicator	Definition and Data Years	Source
Percentage of fatal vehicle crashes in which alcohol was a factor	**Definition**: Percentage of all vehicle crashes resulting in a fatality that were alcohol-related. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *2000 Michigan Annual Drunk Driving Audit* http://www.michigan.gov/msp/0,1607,7-123-1645_3501_4626-27728--,00.html
Adult alcohol and drug treatment admission rate	**Definition**: Unduplicated number of admissions in state-supported alcohol and drug treatment programs, per 1,000 adults ages 18 and older. **Data Year(s)**: Fiscal Year 2000	**Agency**: Michigan Department of Community Health, Division of Quality Management and Planning, Research and Evaluation Section **Data Set/Document**: Michigan Substance Abuse Treatment Client Admission Data
Juvenile alcohol and drug treatment admission rate	**Definition**: Unduplicated number of admissions in state-supported alcohol and drug treatment programs, per 1,000 juveniles ages 17 and younger. **Data Year(s)**: Fiscal Year 2000	**Agency**: Michigan Department of Community Health, Division of Quality Management and Planning, Research and Evaluation Section **Data Set/Document**: Michigan Substance Abuse Treatment Client Admission Data
Percentage of residential properties that are renter-occupied	**Definition**: Percentage of all residential units that are renter occupied units. **Data Year(s)**: 2000	**Agency**: U.S. Census Bureau **Data set/document/web link**: Census 2000 Summary File 1 (SF 1) 100 Percent Data http://www.census.gov/Press-Release/www/2001/sumfile1.html
Percentage of residential properties that are unoccupied	**Definition**: Percentage of all residential units that are vacant. **Data Year(s)**: 2000	**Agency**: U.S. Census Bureau **Data set/document/web link**: Census 2000 Summary File 1 (SF 1) 100 Percent Data http://www.census.gov/Press-Release/www/2001/sumfile1.html
Percentage adult population not registered to vote	**Definition**: Percentage of the adult population (age 18 and older) who are not registered to vote. **Data Year(s)**: October 1998 & 2000	**Agency**: Secretary of State **Data set/document/web link**: *Number of Registered Voters in Michigan from October 24, 2000* http://www.michigan.gov/sos/0,1607,7-127-1633_8722_14689-31523--,00.html
Percentage adult population not voting in presidential elections	**Definition**: Percentage of the adult population (age 18 and older) who did not vote in the 2000 Presidential election. **Data Year(s)**: November 2000	**Agency**: Secretary of State **Data set/document/web link**: *Total Voters by County* http://miboecfr.nicusa.com/election/results/00gen/COUNTYVT.html

Indicator	Definition and Data Years	Source
Rate of new residential building permits	**Definition**: Number of new residential building permits, per 1,000 population. **Data Year(s)**: 2000	**Agency**: U.S. Census Bureau **Data set/document/web link**: *Monthly New-Privately Owned Residential Building Permits: Single Family for Counties in Michigan – Annual 2000* http://www.census.gov/ftp/pub/const/www/permitsindex.html
Adult arrest rate for violent index crimes	**Definition**: Arrests for homicide, aggravated assault, robbery, and rape, per 1,000 adults ages 18 and older. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html
Juvenile arrest rate for violent index crimes	**Definition**: Arrests for homicide, aggravated assault, robbery, and rape, per 1,000 juveniles ages 10 to 17. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html
Homicide rate	**Definition**: Number of homicides (murder, non-negligent manslaughter), per 100,000 population. **Data Year(s)**: 1997 -1999	**Agency**: Michigan Department of Community Health, Vital Statistics **Data set/document/web link**: http://www.mdch.state.mi.us/PHA/OSR/index.asp?id=1
Adult arrest rate for property index crimes	**Definition**: Arrests for burglary, larceny theft, arson, and motor vehicle theft, per 1,000 adults ages 18 and older. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html
Adult arrest rate for other crimes	**Definition**: Arrests for other crimes, per 1,000 adults ages 18 and older. Other crimes include: non-aggravated assault, forgery and counterfeiting, fraud, embezzlement, stolen property, vandalism, weapons, prostitution and common vice laws, sex offenses, gambling, crimes against the family, disorderly conduct. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html

Indicator	Definition and Data Years	Source
Juvenile arrest rate for property index crimes	**Definition**: Arrests for burglary, larceny theft, arson, and motor vehicle theft, per 1,000 juveniles ages 10 to 17. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html
Juvenile arrest rate for other crimes	**Definition**: Arrests for other crimes, per 1,000 juveniles ages 10 to 17. Other crimes include: non-aggravated assault, forgery and counterfeiting, fraud, embezzlement, stolen property, vandalism, weapons, prostitution and common vice laws, sex offenses, gambling, crimes against the family, disorderly conduct, curfew and loitering, and runaways. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www. michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html
Population Density	**Definition:** Population per square mile of land area. **Data Year(s)**: 2000	**Agency:** U.S. Census Bureau **Data set/document/web link**: *Population, Housing Units, Area, and Density: 2000* http://factfinder.census.gov/bf/_lang=en_vt_name=DEC_2000_SF1_U_GCTPH1_ST2_geo_id=04000US26.html
Percentage of population that is male ages 15-34.	**Definition:** Percentage of the total population that is male ages 15 to 34. **Data Year(s)**: 2000	**Agency:** U.S. Census Bureau **Data set/document/web link**: *Sex by Age* Census 2000 Summary File 1 (SF 1) 100 Percent Data http://factfinder.census.gov/servlet/DTTable?_ts=50418658031
Percentage of persons living below poverty level	**Definition**: Percentage of he total population living below the federal poverty level. **Data Year(s)**: 1998	**Agency**: U.S. Census Bureau **Data set/document/web link**: *County Estimates for People of All Ages in Poverty for Michigan: 1998* http://www.census.gov/hhes/www/saipe/stcty/a98_26.htm
Percentage of children living below poverty level	**Definition**: Percentage of children ages 17 and younger living below the federal poverty level. **Data Year(s)**: 1998	**Agency**: U.S. Census Bureau **Data set/document/web link**: *County Estimates for People Under Age 18 in Poverty for Michigan: 1998* http://www.census.gov/hhes/www/saipe/stcty/a98_26.htm

Indicator	Definition and Data Years	Source
Unemployment rate	**Definition**: Percentage of the labor force who are not employed. **Data Year(s)**: 2000	**Agency**: Michigan Department of Career Development, Office of Labor Market Information **Data set/document/web link**: http://www.michlmi.org/
Percentage of population receiving Family Independence Program (FIP) assistance	**Definition**: Percentage of the total population participating in the federal Family Independence Program (formerly Aid to Families with Dependent Children). **Data Year(s)**: Fiscal Year 2000	**Agency**: Michigan Family Independence Agency, Communications Division **Data set/document/web link**: *Total, FIP Federal and State Funded (Non-Two Parent Plus Two Parent): Recipients*
Percentage of population receiving Food Stamps	**Definition**: Percentage of the total population receiving food stamps (reported as the average monthly number of food stamp recipients). **Data Year(s)**: Fiscal Year 2001	**Agency**: Michigan Family Independence Agency **Data set/document/web link**: *Table 45. Food Assistance Program* http://www.michigan.gov/fia/0,1607,7-124-9202--C00.html
Percentage of students receiving free or reduced lunches	**Definition**: Percentage of students in public schools (grades K through 12) whose applications have been approved for the federal Free and Reduced Lunch Program. **Data Year(s)**: School Year 2000-2001	**Agency**: Michigan Department of Education **Data set/document/web link**: *School Breakfast and Lunch Information, by District and Building – School year 2000-01*
Percentage of adults without a high school diploma	**Definition**: Percentage of adults (ages 25 and older) who report not having a high school education (less than 9th grad and 9th-12th grade no diploma) **Data Year(s)**: 2000	**Agency**: Michigan Center for Geographic Information **Data set/document/web link**: *2000 Educational Attainment for Michigan and Counties* http://www.michigan.gov/census/0,1607,7-162-15598_15676---,00.html
Median household income	**Definition**: Median income of all adult household members. **Data Year(s)**: 1998	**Agency**: U.S. Census Bureau **Data set/document/web link**: *County Estimates for Median Household Income for Michigan: 1998* http://www.census.gov/hhes/www/saipe/stcty/c98_26.htm
Alcohol licenses capita	**Definition**: Number of alcohol licenses per capita. **Data Year(s)**: 2000	**Agency**: Michigan Department of Consumer and Industry Service, Liquor Control Commission **Data set/document/web link**: *Active and Escrowed License Lists by County* http://www.cis.state.mi.us/lcc/liclists/liclis4.htm

Indicator	Definition and Data Years	Source
Tobacco retail outlets per capita	**Definition**: Number of tobacco retail outlets per capita. **Data Year(s)**: 2000	**Agency**: Michigan Department of Agriculture **Data set/document/web link**: Annual sampling frame of tobacco retailers.
Alcohol sales per capita	**Definition**: Alcohol sales per 100,000 population. Reported as the average yearly retail alcohol sales. **Data Year(s)**: 2000	**Agency**: Michigan Department of Consumer and Industry Service, Liquor Control Commission **Data set/document/web link**: Report No. CL36780
High school dropout rate	**Definition**: Percentage of enrolled students in grades 9 through 12 who drop out of school in a single year with completing high school. **Data Year(s)**: School Year 1999-2000	**Agency**: Center for Educational Performance and Information **Data set/document/web link**: http://www.michigan.gov/cepi/0,1607,7-113-990-3574--,00.html Note: Data does not include Detroit, Lansing, or Litchfield School Districts.
Divorce rate	**Definition**: Number of divorces (dissolutions and annulments), per 1,000 total population. **Data Year(s)**: 1997-1999	**Agency**: Michigan Department of Community Health, Vital Statistics **Data set/document/web link**: http://www.mdch.state.mi.us/PHA/OSR/index.asp?id=1
Percentage of children living in foster care	**Definition**: Unduplicated average daily number of children in state-supervised, family-based foster care, per 1,000 children ages 17 and younger. **Data Year(s)**: 2000	**Agency**: Michigan Family Independence Agency **Data set/document/web link**: http://www.michigan.gov/fia/0,1607,7-124-9202--C,00.html
Domestic violence arrest rate	**Definition**: Domestic violence arrests of partners (spouses, former spouses, and significant others), per 1,000 population. **Data Year(s)**: 2000	**Agency**: Michigan State Police **Data set/document/web link**: *Uniform Crime Report* http://www.michigan.gov/msp/0,1607,7-123-1645_3501_4621-26742--,00.html
Teen birth rate	**Definition**: Number of live births, per 1,000 females ages 10 to 17. **Data Year(s)**: 1997-1999	**Agency**: Michigan Department of Community Health, Vital Statistics **Data set/document/web link**: http://www.mdch.state.mi.us/PHA/OSR/index.asp?id=1

Indicator	Definition and Data Years	Source
Teen pregnancy rate	**Definition**: Number of pregnancies (live births, abortions, miscarriages), per 1,000 females ages 10 to 17. **Data Year(s)**: 1997-1999	**Agency**: Michigan Department of Community Health, Vital Statistics **Data set/document/web link**: http://www.mdch.state.mi.us/PHA/OSR/index.asp?id=1
Juvenile sexually transmitted disease rate	**Definition**: Number of cases of sexually transmitted diseases (chlamydia, syphilis, and gonorrhea), per 1,000 juveniles ages 17 and younger. **Data Year(s)**: 2000	**Agency**: Michigan Department of Community Health **Data set/document/web link**: http://www.mdch.state.mi.us/PHA/OSR/chi/std_h/frame.html
Adolescent suicide rate	**Definition**: Number of suicides, per 100,000 juveniles ages 10 to 17. **Data Year(s)**: 1997-1999	**Agency**: Michigan Department of Community Health, Vital Statistics **Data set/document/web link**: http://www.mdch.state.mi.us/PHA/OSR/index.asp?id=1
Population Data (for use in calculating rates and percentages and providing county population characteristics on county profiles)	**Definition:** Total population, population ages 18 and older, population ages 17 and younger, population ages 10 to 17, total population ages 25 and older **Data Year(s)**: 2000-2001	**Agency:** U.S. Census Bureau **Data set/document/web link:** Census 2000 Summary File 1 (SF 1) and 2 (SF 2) 100 Percent Data (2000 total population) http://factfinder.census.gov/servlet/DTTable?_ts=50419985766 (2001 total population) http://eire.census.gov/popest/data/counties/tables/CO-EST2001-07/CO-EST2001-07-26.pho (age categories) http://factfinder.census.gov/servlet/DTTable?_ts=50418658031
Race/Ethnicity Data (for providing county population characteristics on county profiles)	**Definition:** Percentage of the population that is White, Black, Hispanic/Latino, and of an "Other" racial or ethnic category. **Data Year(s):** 2000	**Agency:** U.S. Census Bureau **Data set/document/web link:** Census 2000 Summary File 1 (SF 1) 100 Percent Data (White, Black, Other) http://factfinder.census.gov/servlet/DTTable?_ts=50420222594 (Hispanic Latino) http://factfinder.census.gov/servlet/DTTable?_ts=50420391985

Appendix B
Indicator Values for Counties

Table B-1. Substance Use Indicators, by County[1]

County	Juvenile Arrest Rate for Liquor Law Violations	Juvenile Arrest Rate for Drug Possession	Adult Arrest Rate for Liquor Law Violations	Adult Arrest Rate for Drug Possession	Adult DUI Arrest Rate	Percentage of Accidents with an Alcohol-Induced Fatality
Alcona	1.82	0.00	0.95	0.53	7.80	100.00
Alger	20.04	0.95	7.78	2.04	11.61	50.00
Allegan	6.34	2.09	3.57	2.69	10.80	43.75
Alpena	15.97	5.32	5.23	1.93	6.82	66.67
Antrim	5.46	1.46	1.95	1.66	6.12	16.67
Arenac	12.47	2.00	5.74	5.29	17.37	0.00
Baraga	10.42	0.00	7.12	4.75	5.34	33.33
Barry	13.89	2.86	6.03	3.17	8.03	30.77
Bay	16.09	2.29	4.74	1.75	11.38	35.29
Benzie	5.19	2.31	2.04	1.22	6.85	57.14
Berrien	9.01	2.88	4.55	4.27	9.55	37.50
Branch	10.03	5.73	4.52	3.14	10.68	50.00
Calhoun	5.65	2.10	3.57	5.37	8.86	31.82
Cass	5.21	0.95	1.13	2.47	8.23	35.71
Charlevoix	8.98	0.31	4.92	0.98	6.99	0.00
Cheboygan	9.97	2.66	2.43	0.99	14.12	33.33
Chippewa	12.91	1.27	3.59	1.71	5.08	16.67
Clare	6.55	2.18	2.16	0.68	6.98	66.67
Clinton	11.45	2.34	3.87	1.74	8.59	40.00
Crawford	7.32	3.38	1.86	3.16	8.72	0.00
Delta	9.58	3.41	2.86	1.40	5.66	42.86
Dickinson	15.80	4.39	4.91	2.77	11.48	NA[2]
Eaton	2.21	1.14	0.76	1.03	4.19	36.36
Emmet	23.55	3.11	8.91	1.83	14.36	27.27
Genesee	3.49	2.77	1.66	3.11	4.69	41.43
Gladwin	3.01	3.68	1.70	3.05	12.97	0.00
Gogebic	19.49	0.54	9.33	2.17	11.21	NA[2]
Grand Traverse	12.75	4.49	4.32	2.09	10.08	16.67
Gratiot	10.46	0.84	6.08	2.70	8.60	16.67
Hillsdale	4.50	3.17	2.36	2.25	7.03	28.57
Houghton	9.64	2.60	3.41	0.71	7.50	100.00
Huron	15.33	1.35	5.49	2.34	6.95	0.00
Ingham	8.61	3.35	8.33	5.08	8.87	41.18
Ionia	17.40	2.06	4.83	1.76	10.76	12.50
Iosco	10.87	3.20	5.00	1.84	6.60	66.67
Iron	13.97	4.89	2.40	1.25	6.04	66.67
Isabella	13.70	1.65	8.92	1.72	8.32	20.00

(continued)

Table B-1. (continued)

County	Juvenile Arrest Rate for Liquor Law Violations	Juvenile Arrest Rate for Drug Possession	Adult Arrest Rate for Liquor Law Violations	Adult Arrest Rate for Drug Possession	Adult DUI Arrest Rate	Percentage of Accidents with an Alcohol-Induced Fatality
Jackson	5.39	2.26	2.23	4.59	9.06	28.57
Kalamazoo	6.27	0.00	4.87	3.41	6.02	45.46
Kalkaska	12.10	6.56	4.62	6.08	11.11	0.00
Kent	5.82	5.85	3.33	2.40	4.06	28.13
Keweenaw	0.00	0.00	1.68	0.00	6.73	NA[2]
Lake	1.57	5.51	1.58	3.95	12.32	50.00
Lapeer	5.33	2.75	2.24	2.61	7.60	36.36
Leelanau	3.79	0.76	0.31	0.56	4.57	50.00
Lenawee	6.26	2.36	3.71	1.78	9.46	10.00
Livingston	5.05	3.95	1.71	2.16	6.18	35.29
Luce	17.31	5.33	6.52	4.35	10.33	100.00
Mackinac	68.10	11.10	31.32	7.75	16.14	50.00
Macomb	2.03	2.81	1.16	3.66	8.04	26.09
Manistee	18.95	1.82	5.53	3.11	11.33	37.50
Marquette	24.58	3.05	6.63	2.36	10.13	33.33
Mason	14.01	2.04	6.44	1.21	8.17	40.00
Mecosta	15.42	1.66	14.93	2.20	11.97	25.00
Menominee	16.02	2.34	6.23	1.97	12.67	60.00
Midland	4.78	1.53	1.25	1.93	7.37	42.86
Missaukee	7.78	1.56	2.65	2.08	8.43	66.67
Monroe	1.88	0.83	1.63	1.74	5.53	26.67
Montcalm	7.36	3.17	1.92	1.75	9.00	38.10
Montmorency	0.91	2.72	0.36	0.97	3.89	100.00
Muskegon	4.98	4.43	1.44	2.13	6.47	45.46
Newaygo	14.78	3.99	6.86	2.30	13.02	18.75
Oakland	6.43	3.16	2.22	2.82	7.45	29.03
Oceana	4.43	2.35	3.01	1.19	4.30	42.86
Ogemaw	10.60	5.50	2.42	5.38	11.72	33.33
Ontonagon	16.71	1.19	7.05	0.80	13.62	0.00
Osceola	7.58	1.58	2.90	0.77	6.69	40.00
Oscoda	6.22	4.44	5.12	2.35	7.76	66.67
Otsego	16.09	4.69	5.10	1.99	7.50	16.67
Ottawa	11.88	5.08	5.89	2.70	7.69	20.00
Presque Isle	18.01	0.64	2.02	1.40	9.22	33.33
Roscommon	15.38	7.49	5.40	4.22	14.52	25.00
Saginaw	8.88	2.71	2.78	3.63	6.48	25.81
Sanilac	4.28	1.03	5.22	2.92	8.08	30.00
Schoolcraft	13.46	2.07	4.36	0.87	7.42	33.33

(continued)

Table B-1. (continued)

County	Juvenile Arrest Rate for Liquor Law Violations	Juvenile Arrest Rate for Drug Possession	Adult Arrest Rate for Liquor Law Violations	Adult Arrest Rate for Drug Possession	Adult DUI Arrest Rate	Percentage of Accidents with an Alcohol-Induced Fatality
Shiawassee	2.47	3.60	1.16	3.03	7.11	62.50
St. Clair	6.33	3.26	2.46	3.73	8.75	35.29
St. Joseph	12.60	2.00	4.13	3.23	10.12	29.41
Tuscola	5.38	1.28	3.47	2.18	8.84	25.00
Van Buren	10.54	5.12	6.14	4.85	12.56	17.65
Washtenaw	4.63	3.05	5.01	3.49	5.87	28.57
Wayne	1.57	3.58	0.65	8.34	6.02	33.02
Wexford	25.47	7.74	10.22	5.15	13.00	50.00

[1] See Appendix A for indicator definitions and years.

[2] Not applicable due to zero fatal crashes for the county.

Table B-1. (continued)

County	Adult Treatment Admission Rate	Juvenile Treatment Admission Rate
Alcona	6.06	3.59
Alger	3.95	3.95
Allegan	3.26	1.11
Alpena	13.73	3.91
Antrim	8.09	2.49
Arenac	7.59	2.24
Baraga	14.41	10.97
Barry	2.63	0.52
Bay	2.92	1.37
Benzie	6.94	4.27
Berrien	9.78	4.07
Branch	2.03	0.17
Calhoun	4.02	1.17
Cass	4.48	1.69
Charlevoix	5.21	1.77
Cheboygan	8.47	4.31
Chippewa	3.92	3.41
Clare	7.87	4.99
Clinton	0.79	0.16
Crawford	5.04	2.86
Delta	6.23	2.94
Dickinson	4.19	1.45
Eaton	1.79	1.07
Emmet	8.87	2.51
Genesee	6.89	1.67
Gladwin	6.88	4.30
Gogebic	2.36	5.64
Grand Traverse	10.69	4.36
Gratiot	2.22	2.59
Hillsdale	2.41	1.72
Houghton	6.86	6.74
Huron	2.52	1.14
Ingham	3.20	0.23
Ionia	2.31	1.69
Iosco	7.06	4.08
Iron	5.56	3.33
Isabella	4.26	2.17

(continued)

Table B-1. (continued)

County	Adult Treatment Admission Rate	Juvenile Treatment Admission Rate
Jackson	2.80	1.06
Kalamazoo	2.32	0.80
Kalkaska	6.94	1.42
Kent	4.49	1.17
Keweenaw	5.22	3.87
Lake	11.29	0.40
Lapeer	4.36	2.52
Leelanau	2.79	3.88
Lenawee	4.65	1.01
Livingston	0.47	0.04
Luce	6.55	9.97
Mackinac	2.60	0.38
Macomb	2.59	0.94
Manistee	6.93	3.78
Marquette	5.37	2.90
Mason	5.02	2.63
Mecosta	2.98	0.55
Menominee	4.58	2.64
Midland	6.27	1.89
Missaukee	7.60	2.30
Monroe	0.79	0.33
Montcalm	2.73	1.81
Montmorency	12.31	1.43
Muskegon	8.61	2.15
Newaygo	4.66	1.44
Oakland	0.99	0.12
Oceana	4.06	3.43
Ogemaw	10.12	2.95
Ontonagon	1.92	3.80
Osceola	8.49	1.11
Oscoda	9.56	6.83
Otsego	4.98	1.76
Ottawa	4.85	3.23
Presque Isle	7.01	5.63
Roscommon	9.54	6.68
Saginaw	5.71	1.38
Sanilac	4.94	7.92
Schoolcraft	8.20	6.42

(continued)

Table B-1. (continued)

County	Adult Treatment Admission Rate	Juvenile Treatment Admission Rate
Shiawassee	3.46	0.83
St. Clair	4.32	1.96
St. Joseph	3.67	0.52
Tuscola	4.58	1.28
Van Buren	3.82	2.29
Washtenaw	1.02	0.14
Wayne	3.48	0.15
Wexford	11.55	15.29

[1] See Appendix A for indicator definitions and years.

Table B-2. Community Disorganization and Transition Indicators, by County[1]

County	Percentage of Unregistered Voters	Percentage of Adults Who Did Not Vote in Presidential Election
Alcona	0.00	36.00
Alger	16.23	43.13
Allegan	6.30	39.86
Alpena	0.00	39.75
Antrim	2.00	32.37
Arenac	3.33	44.46
Baraga	10.99	48.16
Barry	5.13	36.23
Bay	0.94	37.46
Benzie	0.56	33.22
Berrien	6.39	45.33
Branch	13.23	53.33
Calhoun	7.80	45.42
Cass	10.86	47.12
Charlevoix	0.00	34.22
Cheboygan	0.00	36.80
Chippewa	24.51	52.12
Clare	4.30	45.50
Clinton	0.00	30.54
Crawford	1.06	38.75
Delta	10.00	41.08
Dickinson	0.00	37.01
Eaton	0.00	35.09
Emmet	0.83	36.51
Genesee	0.00	38.51
Gladwin	0.00	40.06
Gogebic	0.00	38.56
Grand Traverse	0.22	33.55
Gratiot	18.46	51.81
Hillsdale	10.64	48.26
Houghton	14.97	48.58
Huron	1.55	37.31
Ingham	6.67	43.03
Ionia	18.02	46.25
Iosco	0.00	36.23
Iron	1.34	39.64
Isabella	19.80	57.41

(continued)

Table B-2. (continued)

County	Percentage of Unregistered Voters	Percentage of Adults Who Did Not Vote in Presidential Election
Jackson	8.86	47.03
Kalamazoo	2.70	43.50
Kalkaska	0.00	43.68
Kent	7.68	38.74
Keweenaw	0.00	23.49
Lake	7.10	45.50
Lapeer	6.80	40.54
Leelanau	0.00	23.99
Lenawee	8.44	45.21
Livingston	0.65	32.03
Luce	14.93	53.57
Mackinac	0.00	34.41
Macomb	9.63	41.68
Manistee	0.00	39.62
Marquette	0.03	41.69
Mason	2.93	38.13
Mecosta	17.39	52.15
Menominee	5.32	45.16
Midland	0.00	35.08
Missaukee	6.92	37.09
Monroe	4.61	41.19
Montcalm	13.01	47.96
Montmorency	4.57	38.26
Muskegon	6.48	43.30
Newaygo	4.67	41.78
Oakland	2.62	35.69
Oceana	3.49	43.53
Ogemaw	0.00	39.08
Ontonagon	0.00	31.84
Osceola	4.22	40.55
Oscoda	1.50	43.07
Otsego	0.00	39.96
Ottawa	7.45	34.40
Presque Isle	1.37	36.04
Roscommon	0.00	35.93
Saginaw	0.00	38.50
Sanilac	3.63	42.48
Schoolcraft	4.66	38.23

(continued)

Table B-2. (continued)

County	Percentage of Unregistered Voters	Percentage of Adults Who Did Not Vote in Presidential Election
Shiawassee	3.29	38.03
St. Clair	5.69	42.70
St. Joseph	5.39	51.17
Tuscola	1.30	41.78
Van Buren	6.85	45.77
Washtenaw	5.44	41.98
Wayne	10.01	47.49
Wexford	0.56	41.25

[1] See Appendix A for indicator definitions and years.

Table B-2. (continued)

County	Percentage of Residential Properties that are Renter Occupied	Percentage of Residential Properties that are Vacant	New Residential Building Permits Per 1,000 Persons
Alcona	4.91	51.51	11.52
Alger	11.47	36.54	9.23
Allegan	15.04	11.84	6.08
Alpena	17.48	16.16	2.87
Antrim	9.26	38.89	13.33
Arenac	10.81	29.83	4.69
Baraga	16.15	27.60	5.83
Barry	12.51	11.90	5.62
Bay	19.59	5.37	2.25
Benzie	9.00	36.97	15.63
Berrien	24.01	13.45	2.99
Branch	17.37	17.52	2.69
Calhoun	24.92	7.82	2.67
Cass	14.95	17.62	6.14
Charlevoix	12.77	32.34	14.22
Cheboygan	11.25	34.66	9.07
Chippewa	18.06	30.65	5.16
Clare	10.12	42.93	4.67
Clinton	14.13	3.97	6.64
Crawford	9.66	43.99	7.01
Delta	16.83	17.62	4.67
Dickinson	16.46	16.90	3.79
Eaton	24.64	4.63	5.01
Emmet	16.57	32.21	12.02
Genesee	24.77	7.52	4.00
Gladwin	8.96	37.24	10.22
Gogebic	14.49	31.50	2.65
Grand Traverse	19.73	12.76	7.78
Gratiot	20.84	6.54	1.47
Hillsdale	17.26	14.14	5.65
Houghton	22.21	22.28	3.22
Huron	11.86	28.55	5.71
Ingham	37.03	5.62	2.55
Ionia	18.74	6.36	6.01
Iosco	10.34	42.60	5.89
Iron	11.53	34.47	3.81
Isabella	33.64	8.57	4.72

(continued)

Table B-2. (continued)

County	Percentage of Residential Properties that are Renter Occupied	Percentage of Residential Properties that are Vacant	New Residential Building Permits Per 1,000 Persons
Jackson	21.72	7.53	4.34
Kalamazoo	32.26	5.81	3.80
Kalkaska	8.85	40.60	7.85
Kent	28.22	4.96	4.70
Keweenaw	4.81	57.11	10.86
Lake	5.92	65.15	9.97
Lapeer	14.18	6.12	6.44
Leelanau	9.76	36.56	13.07
Lenawee	19.68	9.65	4.80
Livingston	11.25	6.00	11.96
Luce	12.20	38.10	4.27
Mackinac	11.20	46.17	9.38
Macomb	20.37	3.46	6.46
Manistee	12.95	30.91	1.39
Marquette	23.67	21.63	3.70
Mason	15.33	28.99	5.13
Mecosta	20.06	23.88	6.49
Menominee	15.82	22.80	5.45
Midland	20.35	6.00	2.82
Missaukee	10.31	36.78	6.01
Monroe	18.13	4.78	4.93
Montcalm	15.72	14.75	3.92
Montmorency	6.70	51.78	9.60
Muskegon	20.57	7.62	4.72
Newaygo	11.82	24.15	4.39
Oakland	24.18	4.25	3.90
Oceana	11.27	34.85	4.80
Ogemaw	8.83	42.60	6.24
Ontonagon	9.59	36.05	2.30
Osceola	12.79	31.06	8.79
Oscoda	6.40	54.88	9.77
Otsego	12.29	32.75	12.75
Ottawa	18.13	5.98	6.38
Presque Isle	8.97	37.89	9.30
Roscommon	6.84	51.32	14.65
Saginaw	24.61	5.94	3.00
Sanilac	14.34	20.85	5.07
Schoolcraft	11.37	36.74	6.63

(continued)

Table B-2. (continued)

County	Percentage of Residential Properties that are Renter Occupied	Percentage of Residential Properties that are Vacant	New Residential Building Permits Per 1,000 Persons
Shiawassee	18.42	7.53	3.92
St. Clair	18.86	7.50	5.70
St. Joseph	20.36	11.78	3.72
Tuscola	14.62	8.23	2.88
Van Buren	16.82	17.64	5.40
Washtenaw	38.53	4.38	5.77
Wayne	31.06	6.98	1.43
Wexford	16.46	20.49	5.38

[1] See Appendix A for indicator definitions and years.

Table B-3. Community Crime Indicators, by County[1]

County	Juvenile Violent Crime Arrest Rate	Adult Violent Crime Arrest Rate	Homicide Rate
Alcona	0.00	0.11	0.00
Alger	0.95	1.15	0.00
Allegan	1.53	1.09	3.27
Alpena	0.80	1.13	1.09
Antrim	0.36	0.34	1.55
Arenac	0.00	1.13	6.08
Baraga	1.04	0.15	0.00
Barry	1.36	0.73	1.22
Bay	1.26	1.02	0.91
Benzie	0.58	0.57	0.00
Berrien	1.32	1.33	9.17
Branch	2.69	1.44	1.52
Calhoun	1.56	3.53	5.22
Cass	0.95	1.00	2.00
Charlevoix	1.24	0.83	0.00
Cheboygan	2.33	0.69	2.80
Chippewa	0.51	0.73	0.88
Clare	0.00	0.42	6.78
Clinton	0.70	0.58	1.05
Crawford	1.13	1.02	0.00
Delta	0.21	0.27	0.00
Dickinson	0.88	0.29	3.70
Eaton	0.30	0.30	2.97
Emmet	0.78	1.24	0.00
Genesee	1.93	1.56	9.32
Gladwin	2.34	1.05	2.63
Gogebic	0.00	0.72	3.86
Grand Traverse	1.46	0.62	1.35
Gratiot	0.00	0.53	1.66
Hillsdale	0.50	1.23	0.71
Houghton	1.30	0.43	0.00
Huron	0.90	0.62	2.83
Ingham	2.39	2.11	4.54
Ionia	1.55	0.80	0.50
Iosco	1.60	0.71	1.30
Iron	1.40	1.15	0.00
Isabella	0.99	0.46	0.57

(continued)

Table B-3. (continued)

County	Juvenile Violent Crime Arrest Rate	Adult Violent Crime Arrest Rate	Homicide Rate
Jackson	1.19	1.17	4.69
Kalamazoo	3.19	1.57	3.34
Kalkaska	1.01	1.22	0.00
Kent	1.24	0.59	4.89
Keweenaw	0.00	0.00	0.00
Lake	2.36	3.28	6.41
Lapeer	0.60	0.47	2.65
Leelanau	0.38	0.31	5.23
Lenawee	1.79	0.52	1.01
Livingston	0.48	0.57	1.59
Luce	2.66	0.72	4.96
Mackinac	1.48	1.51	3.01
Macomb	1.11	1.14	2.62
Manistee	2.19	0.95	2.84
Marquette	2.18	0.45	2.67
Mason	1.46	0.56	1.20
Mecosta	0.95	2.16	2.49
Menominee	1.34	0.31	0.00
Midland	1.82	0.51	0.00
Missaukee	0.52	0.85	4.80
Monroe	1.20	0.70	0.70
Montcalm	1.27	0.90	1.65
Montmorency	0.00	0.36	3.33
Muskegon	1.60	1.30	4.39
Newaygo	1.33	0.97	5.10
Oakland	1.33	0.97	3.91
Oceana	0.52	0.62	1.35
Ogemaw	0.39	1.27	3.16
Ontonagon	2.39	0.48	8.47
Osceola	2.21	0.71	3.01
Oscoda	2.67	1.25	0.00
Otsego	1.01	1.17	0.00
Ottawa	1.55	0.69	1.04
Presque Isle	1.29	0.26	0.00
Roscommon	1.97	0.54	8.56
Saginaw	1.85	1.59	7.94
Sanilac	1.20	0.77	3.10
Schoolcraft	1.04	0.29	0.00

(continued)

Table B-3. (continued)

County	Juvenile Violent Crime Arrest Rate	Adult Violent Crime Arrest Rate	Homicide Rate
Shiawassee	0.56	0.74	1.38
St. Clair	1.66	0.92	1.67
St. Joseph	1.87	1.13	2.18
Tuscola	0.38	0.59	3.45
Van Buren	2.13	1.46	6.17
Washtenaw	0.97	1.04	3.41
Wayne	2.40	6.72	23.08
Wexford	5.24	1.61	2.28

[1] See Appendix A for indicator definitions and years.

Table B-3. (continued)

County	Juvenile Property Crime Arrest Rate	Adult Property Crime Arrest Rate	Juvenile Arrest Rate for Other Crimes	Adult Arrest Rate for Other Crimes
Alcona	6.38	0.74	9.12	3.69
Alger	11.45	1.79	12.40	25.52
Allegan	6.20	1.45	17.14	14.43
Alpena	9.31	1.46	45.50	22.31
Antrim	5.09	1.66	8.00	9.27
Arenac	4.99	1.28	10.97	15.40
Baraga	5.21	0.74	10.42	14.24
Barry	10.90	1.31	21.93	22.60
Bay	14.20	2.40	39.13	24.41
Benzie	3.46	1.47	17.87	23.66
Berrien	14.27	3.05	22.57	33.24
Branch	21.67	3.02	56.95	43.45
Calhoun	4.81	4.10	9.98	29.31
Cass	2.84	1.18	15.46	12.96
Charlevoix	4.33	1.19	12.69	7.55
Cheboygan	6.65	1.54	23.27	26.60
Chippewa	9.36	1.38	32.90	20.87
Clare	5.73	0.89	11.20	14.90
Clinton	2.80	0.88	8.41	18.56
Crawford	11.25	2.13	4.50	16.70
Delta	3.83	0.61	7.45	6.10
Dickinson	21.36	2.09	34.52	18.43
Eaton	1.98	0.35	6.47	10.11
Emmet	17.86	2.81	21.22	32.94
Genesee	11.27	4.20	10.78	13.87
Gladwin	20.09	2.35	39.84	22.33
Gogebic	12.99	1.66	18.95	14.18
Grand Traverse	40.66	4.73	48.71	26.09
Gratiot	7.53	1.09	12.76	15.14
Hillsdale	16.68	2.07	27.69	40.37
Houghton	15.11	1.60	29.43	9.17
Huron	3.83	1.17	30.67	18.77
Ingham	9.91	2.78	22.34	31.15
Ionia	9.80	1.85	24.88	21.62
Iosco	11.19	1.46	23.02	34.13
Iron	8.38	2.59	32.12	14.57
Isabella	14.69	1.96	19.47	35.89

(continued)

Table B-3. (continued)

County	Juvenile Property Crime Arrest Rate	Adult Property Crime Arrest Rate	Juvenile Arrest Rate for Other Crimes	Adult Arrest Rate for Other Crimes
Jackson	4.91	1.99	15.69	19.44
Kalamazoo	26.66	3.50	32.27	26.16
Kalkaska	18.15	2.43	35.30	61.14
Kent	16.68	2.97	20.11	17.26
Keweenaw	0.00	0.00	3.28	7.85
Lake	3.15	2.37	9.45	30.28
Lapeer	9.10	1.77	12.45	13.74
Leelanau	0.38	0.00	0.76	3.70
Lenawee	5.45	1.68	17.23	21.17
Livingston	6.71	1.32	12.95	12.28
Luce	42.61	1.63	38.62	19.02
Mackinac	19.99	3.77	39.97	34.33
Macomb	8.52	2.93	5.96	15.39
Manistee	17.49	2.11	27.70	25.40
Marquette	31.41	3.54	51.63	32.63
Mason	10.80	0.89	21.89	23.06
Mecosta	11.15	2.10	12.10	22.79
Menominee	8.68	1.61	29.37	23.83
Midland	9.74	2.00	12.99	10.54
Missaukee	16.59	2.75	31.10	32.21
Monroe	3.96	1.61	9.70	15.19
Montcalm	8.50	1.57	17.51	21.46
Montmorency	12.72	1.46	11.81	8.39
Muskegon	8.08	1.93	26.12	14.34
Newaygo	21.88	2.92	25.28	20.68
Oakland	11.03	3.46	9.23	11.84
Oceana	4.69	0.78	17.72	6.27
Ogemaw	9.82	2.48	11.00	28.02
Ontonagon	5.97	0.48	26.25	16.66
Osceola	9.48	0.71	21.79	24.73
Oscoda	9.78	0.97	19.56	33.65
Otsego	16.76	2.29	19.77	18.93
Ottawa	19.87	2.39	61.30	27.01
Presque Isle	1.29	0.18	9.65	7.55
Roscommon	31.15	2.99	50.08	26.35
Saginaw	6.25	1.72	17.10	25.10
Sanilac	4.96	2.15	12.32	23.90
Schoolcraft	4.14	0.44	14.49	8.87

(continued)

Table B-3. (continued)

County	Juvenile Property Crime Arrest Rate	Adult Property Crime Arrest Rate	Juvenile Arrest Rate for Other Crimes	Adult Arrest Rate for Other Crimes
Shiawassee	10.00	1.89	9.77	18.61
St. Clair	9.06	1.92	21.96	17.64
St. Joseph	13.85	3.87	29.20	30.86
Tuscola	5.89	0.75	14.34	25.36
Van Buren	10.73	2.99	26.87	43.06
Washtenaw	6.51	2.40	10.01	14.36
Wayne	6.63	10.24	14.95	49.58
Wexford	28.21	4.62	60.92	60.64

[1] See Appendix A for indicator definitions and years.

Table B-4. High Risk Demographic Subgroup Indicators, by County[1]

County	Percentage of Population that is Male Ages 15 to 34	Population Density
Alcona	8.46	17.38
Alger	14.83	10.74
Allegan	13.20	127.70
Alpena	11.45	54.54
Antrim	10.96	48.45
Arenac	12.36	47.08
Baraga	14.89	9.67
Barry	12.42	102.05
Bay	12.52	247.96
Benzie	10.83	49.79
Berrien	12.23	284.51
Branch	13.86	90.24
Calhoun	13.19	194.70
Cass	12.14	103.83
Charlevoix	11.24	62.59
Cheboygan	11.12	36.96
Chippewa	18.57	24.69
Clare	11.19	55.14
Clinton	12.15	113.31
Crawford	11.55	25.57
Delta	11.67	32.92
Dickinson	11.09	35.85
Eaton	13.29	179.83
Emmet	12.12	67.20
Genesee	13.18	681.85
Gladwin	10.77	51.35
Gogebic	12.98	15.76
Grand Traverse	12.70	166.97
Gratiot	16.57	74.17
Hillsdale	13.62	77.70
Houghton	20.48	35.60
Huron	11.28	43.13
Ingham	18.15	499.51
Ionia	18.59	107.32
Iosco	9.44	49.79
Iron	10.17	11.26
Isabella	20.83	110.32

(continued)

Table B-4. (continued)

County	Percentage of Population that is Male Ages 15 to 34	Population Density
Jackson	13.71	224.20
Kalamazoo	16.12	424.67
Kalkaska	12.04	29.54
Kent	15.21	670.82
Keweenaw	14.12	4.25
Lake	12.78	19.97
Lapeer	13.16	134.37
Leelanau	9.90	60.60
Lenawee	14.01	131.77
Livingston	12.31	276.13
Luce	18.14	7.78
Mackinac	10.60	11.69
Macomb	13.49	1,640.47
Manistee	12.25	45.12
Marquette	15.19	35.49
Mason	11.41	57.10
Mecosta	18.78	72.98
Menominee	11.72	24.27
Midland	13.01	159.01
Missaukee	12.06	25.55
Monroe	13.10	264.82
Montcalm	14.53	86.53
Montmorency	9.46	18.84
Muskegon	13.69	334.30
Newaygo	12.00	56.83
Oakland	13.12	1,368.64
Oceana	12.83	49.72
Ogemaw	10.46	38.36
Ontonagon	9.25	5.96
Osceola	12.47	40.99
Oscoda	9.40	16.67
Otsego	12.14	45.29
Ottawa	14.85	421.31
Presque Isle	10.08	21.83
Roscommon	8.81	48.85
Saginaw	12.94	259.65
Sanilac	12.26	46.22
Schoolcraft	11.86	7.56

(continued)

Table B-4. (continued)

County	Percentage of Population that is Male Ages 15 to 34	Population Density
Shiawassee	12.78	133.07
St. Clair	12.89	226.73
St. Joseph	13.61	123.92
Tuscola	13.34	71.72
Van Buren	12.57	124.85
Washtenaw	18.89	454.82
Wayne	13.64	3,356.12
Wexford	12.62	53.91

[1] See Appendix A for indicator definitions and years.

Table B-5. Extreme Economic and Social Deprivation Indicators, by County[1]

County	Unemployment Rate	Percentage of Enrolled Students Receiving Free or Reduced Lunches	Percentage of Population Receiving FITAP	Percentage of Population Receiving Food Stamps	Percentage of Adults Without a High School Education	Percentage of Population Below Poverty Level	Percentage of Children Below Poverty Level	Median Income
Alcona	6.53	35.75	1.20	5.90	20.25	14.77	25.46	$ 27,860.00
Alger	5.59	32.40	1.18	4.70	18.45	11.06	16.15	$ 32,932.00
Allegan	2.98	21.05	0.52	3.32	17.68	8.72	12.35	$ 45,003.00
Alpena	6.15	34.98	1.50	7.79	16.90	13.64	19.59	$ 33,329.00
Antrim	5.25	33.15	0.59	3.52	15.39	10.61	17.03	$ 35,748.00
Arenac	6.87	39.97	1.89	9.22	23.22	17.38	26.35	$ 28,865.00
Baraga	7.26	32.21	1.20	5.02	19.40	12.85	20.23	$ 30,733.00
Barry	3.12	18.06	1.13	3.81	13.24	9.00	13.06	$ 45,751.00
Bay	4.14	29.10	1.79	7.13	17.57	12.29	18.51	$ 37,524.00
Benzie	5.23	39.42	0.51	3.98	14.63	10.87	18.35	$ 33,000.00
Berrien	3.78	41.56	2.42	8.73	18.07	14.43	21.93	$ 36,552.00
Branch	4.07	28.21	0.91	5.46	20.02	12.48	19.29	$ 35,431.00
Calhoun	4.34	35.25	2.12	7.89	16.77	13.34	20.16	$ 38,041.00
Cass	3.35	36.67	1.72	6.97	19.56	12.70	18.31	$ 38,362.00
Charlevoix	5.10	26.43	0.44	3.59	13.98	9.30	13.23	$ 38,155.00
Cheboygan	10.10	35.45	0.62	6.19	18.13	13.60	21.38	$ 30,681.00
Chippewa	6.88	41.49	1.04	6.07	17.62	12.84	19.29	$ 31,564.00
Clare	6.70	48.31	2.39	10.26	23.88	18.17	28.25	$ 26,801.00
Clinton	2.14	13.41	0.63	2.25	10.80	6.45	10.35	$ 51,677.00
Crawford	5.70	46.72	1.35	7.82	19.18	14.35	21.80	$ 30,332.00
Delta	6.23	30.63	0.96	6.67	13.88	12.18	16.84	$ 34,685.00
Dickinson	4.46	23.12	0.93	4.12	11.23	9.50	13.58	$ 37,118.00
Eaton	2.45	17.94	0.62	3.36	10.47	7.56	11.49	$ 48,279.00
Emmet	6.58	24.19	0.37	3.04	11.04	8.71	12.26	$ 38,139.00
Genesee	5.45	34.92	4.15	10.05	16.86	14.75	23.12	$ 40,296.00
Gladwin	6.59	40.56	1.48	7.06	21.73	15.09	20.58	$ 30,446.00
Gogebic	6.44	45.43	2.50	8.20	14.52	14.53	21.41	$ 27,186.00
Grand Traverse	3.68	24.92	0.29	2.97	10.71	7.85	11.64	$ 41,264.00
Gratiot	4.66	31.58	0.86	4.93	16.53	11.95	18.99	$ 35,171.00
Hillsdale	3.72	32.29	0.79	4.73	16.86	10.94	15.25	$ 37,329.00
Houghton	4.87	38.44	0.61	6.23	15.40	14.06	19.24	$ 29,540.00
Huron	4.87	33.76	0.72	5.28	21.73	12.23	16.78	$ 34,809.00
Ingham	2.65	30.83	2.29	6.76	11.87	12.35	17.46	$ 41,743.00
Ionia	4.00	26.72	1.19	4.55	16.60	9.10	12.98	$ 40,687.00
Iosco	7.48	50.31	1.45	7.37	22.06	13.88	19.94	$ 27,950.00
Iron	6.42	38.40	1.95	6.08	15.20	13.90	20.54	$ 26,737.00
Isabella	2.89	28.59	0.88	4.53	13.93	12.75	17.28	$ 35,537.00

(continued)

Table B-5. (continued)

County	Unemployment Rate	Percentage of Enrolled Students Receiving Free or Reduced Lunches	Percentage of Population Receiving FITAP	Percentage of Population Receiving Food Stamps	Percentage of Adults Without a High School Education	Percentage of Population Below Poverty Level	Percentage of Children Below Poverty Level	Median Income
Jackson	3.10	34.47	1.87	6.01	15.78	11.28	17.03	$ 39,781.00
Kalamazoo	2.86	32.65	1.84	6.25	11.22	10.86	16.56	$ 43,370.00
Kalkaska	5.68	44.95	0.71	6.07	20.04	12.27	14.73	$ 31,359.00
Kent	3.10	31.18	1.32	5.32	15.39	8.89	13.67	$ 46,860.00
Keweenaw	8.57	.	9.56	4.95	16.28	11.67	15.98	$ 26,059.00
Lake	6.80	86.16	2.80	13.03	27.76	20.95	29.17	$ 23,379.00
Lapeer	4.16	20.04	0.62	2.85	15.49	6.95	10.14	$ 50,835.00
Leelanau	3.06	23.19	0.38	2.74	9.27	7.60	10.17	$ 43,183.00
Lenawee	3.80	21.09	0.92	4.10	16.60	8.84	12.77	$ 42,864.00
Livingston	1.97	6.87	0.15	1.01	8.61	3.94	5.60	$ 64,705.00
Luce	6.73	42.80	5.72	10.18	24.48	14.39	21.28	$ 29,338.00
Mackinac	8.55	39.14	1.38	3.58	17.50	13.16	19.41	$ 29,439.00
Macomb	3.10	17.47	0.66	2.65	17.05	6.10	9.72	$ 51,187.00
Manistee	6.15	37.93	0.85	6.70	18.55	14.02	21.76	$ 30,553.00
Marquette	4.87	26.24	1.16	4.82	11.53	10.69	14.39	$ 37,109.00
Mason	5.48	35.21	1.12	6.97	17.33	13.17	19.22	$ 32,748.00
Mecosta	4.04	44.27	2.08	8.31	16.18	14.94	22.33	$ 32,790.00
Menominee	4.58	35.86	1.46	5.30	16.53	11.20	15.09	$ 34,063.00
Midland	3.06	20.47	0.73	3.94	11.03	8.87	12.89	$ 50,536.00
Missaukee	5.21	41.36	1.46	.	21.35	14.75	20.09	$ 32,041.00
Monroe	3.16	17.32	0.99	3.24	16.88	7.75	11.61	$ 50,505.00
Montcalm	5.06	35.23	1.20	5.36	18.83	11.79	14.43	$ 35,463.00
Montmorency	10.42	44.45	1.68	8.42	25.16	15.16	22.61	$ 26,382.00
Muskegon	4.57	39.74	3.21	9.49	16.94	13.87	20.62	$ 36,648.00
Newaygo	6.13	36.76	1.04	7.09	21.29	13.03	18.22	$ 35,599.00
Oakland	2.21	15.18	0.71	2.53	10.73	6.30	10.12	$ 62,538.00
Oceana	6.99	47.39	1.92	9.34	20.23	15.36	19.35	$ 32,798.00
Ogemaw	6.05	42.26	2.32	10.09	25.00	16.64	22.25	$ 26,507.00
Ontonagon	8.26	47.36	1.78	6.28	16.21	13.63	19.92	$ 28,592.00
Osceola	5.52	42.61	1.60	8.26	19.48	14.92	19.03	$ 31,795.00
Oscoda	7.80	47.25	1.84	9.51	26.33	15.88	21.25	$ 26,599.00
Otsego	4.46	31.72	0.93	5.31	14.55	9.18	12.51	$ 38,643.00
Ottawa	2.53	18.71	0.26	1.84	13.37	5.19	7.34	$ 53,286.00
Presque Isle	10.34	37.83	0.53	4.54	22.96	11.95	16.24	$ 29,755.00
Roscommon	6.59	47.07	1.97	9.86	20.54	16.54	25.63	$ 25,391.00
Saginaw	4.16	42.37	4.57	10.61	18.42	15.22	23.19	$ 37,297.00
Sanilac	5.49	30.35	0.75	6.18	20.30	12.77	17.85	$ 33,925.00
Schoolcraft	8.43	41.50	1.30	8.77	20.58	15.05	21.77	$ 30,237.00

(continued)

Table B-5. (continued)

County	Unemployment Rate	Percentage of Enrolled Students Receiving Free or Reduced Lunches	Percentage of Population Receiving FITAP	Percentage of Population Receiving Food Stamps	Percentage of Adults Without a High School Education	Percentage of Population Below Poverty Level	Percentage of Children Below Poverty Level	Median Income
Shiawassee	4.26	21.27	0.57	4.93	15.63	9.61	12.92	$ 39,898.00
St. Clair	4.21	21.33	1.09	4.90	17.16	9.10	13.37	$ 44,117.00
St. Joseph	3.44	32.48	1.16	6.32	21.41	11.38	15.64	$ 37,675.00
Tuscola	5.26	32.37	1.20	4.80	18.84	10.89	14.78	$ 37,701.00
Van Buren	4.40	39.99	2.02	9.00	21.12	14.07	18.16	$ 35,586.00
Washtenaw	1.64	22.81	0.86	2.75	8.47	7.85	11.31	$ 54,326.00
Wayne	3.86	44.20	4.70	10.96	23.02	17.32	25.80	$ 37,525.00
Wexford	6.72	35.92	0.70	10.94	18.04	14.05	19.65	$ 32,931.00

[1] See Appendix A for indicator definitions and years.

Note: Missing or unreported data are indicated with a period (.).

Table B-6. Alcohol and Tobacco Availability Indicators, by County[1]

County	Alcohol Permits Per 1,000 Persons	Tobacco Outlets Per 1,000 Persons	Alcohol Sales Per Capita
Alcona	4.52	3.41	$ 1,616.88
Alger	5.88	3.24	$ 1,733.78
Allegan	1.61	1.39	$ 2,237.60
Alpena	2.75	2.68	$ 1,541.24
Antrim	3.25	2.25	$ 1,265.94
Arenac	3.88	2.90	$ 1,761.62
Baraga	4.23	2.17	$ 1,991.89
Barry	1.48	1.18	$ 3,030.33
Bay	2.37	2.03	$ 1,848.70
Benzie	3.31	2.06	$ 1,372.24
Berrien	2.16	1.99	$ 1,777.51
Branch	1.86	2.01	$ 2,817.22
Calhoun	1.93	1.82	$ 1,578.47
Cass	1.90	1.31	$ 4,595.25
Charlevoix	3.30	2.18	$ 1,110.05
Cheboygan	4.54	3.21	$ 1,180.33
Chippewa	3.50	2.91	$ 1,452.25
Clare	3.04	2.34	$ 1,794.62
Clinton	1.51	1.05	$ 3,224.04
Crawford	2.66	2.45	$ 1,172.78
Delta	3.30	2.80	$ 1,870.49
Dickinson	2.98	1.93	$ 4,028.13
Eaton	1.25	1.29	$ 2,028.51
Emmet	3.59	2.70	$ 928.43
Genesee	1.72	1.86	$ 1,375.16
Gladwin	2.61	2.19	$ 2,063.92
Gogebic	4.55	2.36	$ 3,499.81
Grand Traverse	2.09	2.01	$ 1,024.28
Gratiot	2.06	1.77	$ 3,988.70
Hillsdale	1.63	1.59	$ 4,276.60
Houghton	3.14	1.67	$ 1,770.32
Huron	3.69	2.72	$ 1,990.30
Ingham	1.45	1.60	$ 1,446.50
Ionia	1.63	1.20	$ 3,507.13
Iosco	3.88	3.47	$ 1,242.08
Iron	4.72	1.60	$ 1,983.02
Isabella	1.66	1.53	$ 1,607.09

(continued)

Table B-6. (continued)

County	Alcohol Permits Per 1,000 Persons	Tobacco Outlets Per 1,000 Persons	Alcohol Sales Per Capita
Jackson	1.90	1.85	$ 1,850.84
Kalamazoo	1.37	1.32	$ 1,505.44
Kalkaska	2.11	2.17	$ 2,173.12
Kent	1.26	1.26	$ 1,495.17
Keweenaw	7.82	4.78	$ 1,797.89
Lake	3.62	2.29	$ 1,220.65
Lapeer	1.49	1.46	$ 2,370.58
Leelanau	3.74	2.60	$ 1,248.93
Lenawee	1.76	1.53	$ 2,742.95
Livingston	1.15	0.98	$ 1,894.30
Luce	5.98	4.13	$ 1,558.89
Mackinac	7.95	4.02	$ 719.03
Macomb	1.49	1.65	$ 1,377.35
Manistee	3.34	2.12	$ 1,478.22
Marquette	2.77	1.86	$ 1,825.40
Mason	3.11	2.02	$ 1,405.63
Mecosta	2.10	1.87	$ 1,857.43
Menominee	2.65	1.50	$ 3,765.32
Midland	1.46	1.22	$ 2,280.61
Missaukee	2.00	1.52	$ 3,113.34
Monroe	1.72	1.40	$ 1,673.80
Montcalm	2.06	1.63	$ 2,709.25
Montmorency	4.36	2.62	$ 1,228.48
Muskegon	1.76	1.29	$ 1,473.77
Newaygo	1.69	1.32	$ 2,536.12
Oakland	1.41	1.34	$ 1,274.97
Oceana	2.57	2.12	$ 2,239.29
Ogemaw	3.37	2.45	$ 1,644.58
Ontonagon	6.65	4.22	$ 1,669.25
Osceola	2.28	1.90	$ 2,366.60
Oscoda	3.29	2.34	$ 1,301.56
Otsego	3.30	2.45	$ 1,106.66
Ottawa	0.87	0.93	$ 2,287.26
Presque Isle	3.68	2.78	$ 1,864.76
Roscommon	3.85	2.43	$ 1,073.57
Saginaw	2.01	1.75	$ 1,552.36
Sanilac	2.36	1.93	$ 3,183.46
Schoolcraft	5.95	3.59	$ 1,665.82

(continued)

Table B-6. (continued)

County	Alcohol Permits Per 1,000 Persons	Tobacco Outlets Per 1,000 Persons	Alcohol Sales Per Capita
Shiawassee	1.72	1.44	$ 2,696.56
St. Clair	2.04	1.82	$ 1,667.15
St. Joseph	1.87	1.52	$ 2,655.33
Tuscola	1.80	1.53	$ 4,087.61
Van Buren	1.95	1.63	$ 2,121.94
Washtenaw	1.37	1.20	$ 1,466.83
Wayne	1.79	1.82	$ 2,425.96
Wexford	2.79	2.26	$ 1,440.49

[1] See Appendix A for indicator definitions and years.

Table B-7. Lack of Commitment to School Indicators, by County[1]

County	Dropout Rate[2]
Alcona	4.26
Alger	3.57
Allegan	5.63
Alpena	6.20
Antrim	4.42
Arenac	6.42
Baraga	4.75
Barry	4.64
Bay	6.62
Benzie	4.96
Berrien	5.56
Branch	5.49
Calhoun	5.27
Cass	3.45
Charlevoix	2.60
Cheboygan	3.91
Chippewa	3.61
Clare	3.22
Clinton	2.36
Crawford	0.74
Delta	3.36
Dickinson	1.23
Eaton	2.59
Emmet	2.41
Genesee	4.30
Gladwin	9.75
Gogebic	5.31
Grand Traverse	4.29
Gratiot	2.59
Hillsdale	5.06
Houghton	2.11
Huron	2.93
Ingham	2.08
Ionia	4.91
Iosco	3.68
Iron	2.89
Isabella	2.27

(continued)

Table B-7. (continued)

County	Dropout Rate[2]
Jackson	4.50
Kalamazoo	2.71
Kalkaska	3.11
Kent	3.14
Keweenaw	NA[3]
Lake	7.53
Lapeer	4.43
Leelanau	0.88
Lenawee	4.72
Livingston	2.42
Luce	6.08
Mackinac	2.33
Macomb	2.76
Manistee	3.99
Marquette	2.76
Mason	2.06
Mecosta	1.41
Menominee	4.26
Midland	5.20
Missaukee	6.56
Monroe	5.50
Montcalm	4.64
Montmorency	3.88
Muskegon	4.51
Newaygo	3.15
Oakland	4.98
Oceana	2.55
Ogemaw	9.46
Ontonagon	1.94
Osceola	2.01
Oscoda	6.21
Otsego	3.95
Ottawa	2.71
Presque Isle	3.92
Roscommon	8.57
Saginaw	3.68
Sanilac	4.67
Schoolcraft	1.38

(continued)

Table B-7. (continued)

County	Dropout Rate[2]
Shiawassee	3.94
St. Clair	4.22
St. Joseph	5.28
Tuscola	3.32
Van Buren	3.50
Washtenaw	3.86
Wayne	4.20
Wexford	4.23

[1] See Appendix A for indicator definitions and years.

[2] Dropout data for Detroit, Lansing, and Litchfield School Districts were not available.

[3] Not applicable – the county does not have any high schools for which to calculate a dropout rate.

Table B-8. Family Conflict and Management Problem Indicators, by County[1]

County	Domestic Violence Arrest Rate	Percentage of Children Living in Foster Care	Divorce Rate
Alcona	1.19	2.25	6.44
Alger	2.94	0.54	10.35
Allegan	4.51	4.76	4.04
Alpena	3.32	1.19	4.62
Antrim	2.25	6.20	4.75
Arenac	4.46	0.42	3.25
Baraga	1.49	0.45	3.46
Barry	5.67	1.19	4.80
Bay	7.55	3.54	4.04
Benzie	4.13	0.85	4.46
Berrien	5.93	3.10	4.28
Branch	4.91	1.68	4.52
Calhoun	8.99	3.64	4.70
Cass	6.03	2.79	4.60
Charlevoix	1.46	2.59	4.97
Cheboygan	4.20	2.49	4.37
Chippewa	2.83	1.45	3.17
Clare	3.62	1.42	5.61
Clinton	3.23	1.87	4.02
Crawford	4.76	4.26	4.26
Delta	1.09	0.59	4.11
Dickinson	4.30	1.26	4.52
Eaton	2.47	0.83	5.79
Emmet	4.23	1.79	4.68
Genesee	7.74	1.48	4.41
Gladwin	3.65	0.73	4.57
Gogebic	2.76	0.48	3.49
Grand Traverse	4.51	1.99	5.21
Gratiot	3.07	3.35	3.51
Hillsdale	5.48	3.35	5.11
Houghton	2.58	0.44	2.85
Huron	2.63	0.89	3.47
Ingham	7.53	4.34	3.98
Ionia	4.32	2.11	4.01
Iosco	4.94	2.96	4.93
Iron	4.11	0.33	5.81
Isabella	3.82	3.19	3.83

(continued)

Table B-8. (continued)

County	Domestic Violence Arrest Rate	Percentage of Children Living in Foster Care	Divorce Rate
Jackson	9.42	3.05	5.04
Kalamazoo	7.98	4.18	4.21
Kalkaska	6.03	4.65	4.38
Kent	3.20	3.97	3.86
Keweenaw	2.17	0.00	4.44
Lake	6.26	4.96	3.04
Lapeer	2.24	2.13	4.26
Leelanau	1.99	0.83	4.53
Lenawee	4.92	3.41	4.24
Livingston	2.24	0.46	3.83
Luce	2.85	2.53	3.13
Mackinac	3.35	0.72	4.09
Macomb	4.18	2.01	3.51
Manistee	3.95	1.44	4.05
Marquette	5.28	5.26	4.05
Mason	3.29	1.84	4.91
Mecosta	4.96	2.52	3.68
Menominee	4.94	0.73	4.16
Midland	3.95	5.29	4.25
Missaukee	3.18	2.09	3.58
Monroe	5.93	2.40	4.35
Montcalm	4.29	2.00	4.43
Montmorency	1.94	1.15	3.33
Muskegon	7.53	3.73	4.94
Newaygo	5.95	2.33	5.19
Oakland	3.68	1.69	3.89
Oceana	3.31	1.64	5.02
Ogemaw	4.94	2.12	3.76
Ontonagon	3.07	0.76	1.06
Osceola	4.01	2.72	3.78
Oscoda	4.57	6.10	4.88
Otsego	3.61	1.20	5.38
Ottawa	4.83	2.88	2.37
Presque Isle	2.01	1.99	2.53
Roscommon	6.01	1.85	4.25
Saginaw	9.82	3.26	3.43
Sanilac	4.24	0.88	4.34
Schoolcraft	1.57	0.25	4.07

(continued)

Table B-8. (continued)

County	Domestic Violence Arrest Rate	Percentage of Children Living in Foster Care	Divorce Rate
Shiawassee	4.21	1.72	3.96
St. Clair	5.81	3.94	4.47
St. Joseph	6.23	1.92	5.21
Tuscola	4.72	2.27	3.74
Van Buren	9.56	3.66	4.91
Washtenaw	4.96	2.64	3.69
Wayne	2.84	3.21	3.23
Wexford	6.27	0.94	5.72

[1] See Appendix A for indicator definitions and years.

Table B-9. Adolescent Sexual Behavior Indicators, by County[1]

County	Teen Birth Rate	Teen Pregnancy Rate	Juvenile Sexually Transmitted Disease Rate
Alcona	6.68	8.51	0.00
Alger	4.13	7.09	0.00
Allegan	8.72	13.11	1.41
Alpena	7.49	10.59	0.00
Antrim	10.23	16.68	2.66
Arenac	7.99	11.81	0.00
Baraga	12.76	17.01	0.00
Barry	6.90	10.70	0.97
Bay	8.53	14.13	4.05
Benzie	10.09	15.13	0.53
Berrien	16.52	24.22	10.59
Branch	10.92	16.87	3.68
Calhoun	13.16	21.92	7.06
Cass	9.70	15.00	2.60
Charlevoix	8.75	14.10	1.33
Cheboygan	7.42	9.57	0.48
Chippewa	9.86	12.86	1.95
Clare	13.45	18.40	2.49
Clinton	4.17	7.76	0.33
Crawford	15.29	19.93	1.14
Delta	7.43	9.40	0.55
Dickinson	5.93	7.46	0.00
Eaton	6.54	11.29	1.77
Emmet	7.07	10.90	1.76
Genesee	13.71	21.90	8.86
Gladwin	9.83	14.51	0.50
Gogebic	5.87	6.65	0.28
Grand Traverse	6.37	10.64	1.52
Gratiot	8.03	12.73	1.49
Hillsdale	9.73	14.94	2.45
Houghton	6.79	9.24	0.51
Huron	4.08	6.70	0.80
Ingham	11.26	19.96	7.76
Ionia	8.56	11.28	0.97
Iosco	7.53	13.51	0.82
Iron	6.70	9.27	0.74
Isabella	7.46	11.63	3.10

(continued)

Table B-9. (continued)

County	Teen Birth Rate	Teen Pregnancy Rate	Juvenile Sexually Transmitted Disease Rate
Jackson	12.63	21.26	7.86
Kalamazoo	10.95	19.21	7.11
Kalkaska	9.30	13.62	1.18
Kent	13.10	18.82	7.41
Keweenaw	3.41	3.41	1.93
Lake	17.33	22.90	3.63
Lapeer	6.32	10.58	0.85
Leelanau	6.18	8.13	2.13
Lenawee	8.49	13.56	1.87
Livingston	2.41	6.31	0.44
Luce	7.14	11.60	0.66
Mackinac	6.48	9.18	0.38
Macomb	4.05	9.36	1.19
Manistee	6.59	10.55	1.62
Marquette	4.43	7.25	1.66
Mason	11.70	16.29	1.31
Mecosta	7.98	11.64	5.91
Menominee	6.30	7.46	1.81
Midland	5.57	8.87	1.48
Missaukee	10.49	13.87	2.04
Monroe	6.54	9.73	1.45
Montcalm	11.09	16.27	1.21
Montmorency	7.04	11.52	0.00
Muskegon	15.19	23.16	10.03
Newaygo	11.67	15.12	2.30
Oakland	4.83	9.25	2.45
Oceana	12.42	17.03	1.72
Ogemaw	7.15	9.63	0.20
Ontonagon	5.40	6.17	0.00
Osceola	10.14	15.33	0.32
Oscoda	16.31	19.58	0.00
Otsego	6.54	10.66	2.08
Ottawa	7.69	10.74	1.43
Presque Isle	7.78	12.29	0.00
Roscommon	7.22	13.19	0.79
Saginaw	12.75	18.56	7.21
Sanilac	7.37	11.42	1.00
Schoolcraft	5.82	7.11	1.97

(continued)

Table B-9. (continued)

County	Teen Birth Rate	Teen Pregnancy Rate	Juvenile Sexually Transmitted Disease Rate
Shiawassee	6.87	10.55	1.51
St. Clair	7.82	14.05	2.68
St. Joseph	11.64	16.71	3.14
Tuscola	5.86	9.71	2.11
Van Buren	12.89	19.75	4.11
Washtenaw	6.30	14.34	6.17
Wayne	14.19	22.74	10.68
Wexford	12.09	17.28	2.94

[1] See Appendix A for indicator definitions and years.

Table B-10. Suicide Indicators, by County[1]

County	Adolescent Suicide Rate
Alcona	0.00
Alger	0.00
Allegan	0.00
Alpena	17.79
Antrim	0.00
Arenac	0.00
Baraga	0.00
Barry	4.87
Bay	5.06
Benzie	0.00
Berrien	0.00
Branch	0.00
Calhoun	4.05
Cass	5.47
Charlevoix	0.00
Cheboygan	0.00
Chippewa	8.63
Clare	19.53
Clinton	4.00
Crawford	0.00
Delta	0.00
Dickinson	0.00
Eaton	2.61
Emmet	0.00
Genesee	4.36
Gladwin	22.07
Gogebic	0.00
Grand Traverse	3.89
Gratiot	6.73
Hillsdale	5.63
Houghton	0.00
Huron	0.00
Ingham	1.15
Ionia	3.96
Iosco	0.00
Iron	0.00
Isabella	0.00

(continued)

Table B-10. (continued)

County	Adolescent Suicide Rate
Jackson	3.77
Kalamazoo	5.70
Kalkaska	0.00
Kent	1.62
Keweenaw	0.00
Lake	0.00
Lapeer	2.73
Leelanau	0.00
Lenawee	7.79
Livingston	5.22
Luce	0.00
Mackinac	0.00
Macomb	5.23
Manistee	26.49
Marquette	4.59
Mason	40.88
Mecosta	15.87
Menominee	22.30
Midland	6.71
Missaukee	0.00
Monroe	1.78
Montcalm	8.64
Montmorency	0.00
Muskegon	5.09
Newaygo	0.00
Oakland	2.95
Oceana	0.00
Ogemaw	26.16
Ontonagon	0.00
Osceola	11.11
Oscoda	0.00
Otsego	12.04
Ottawa	1.20
Presque Isle	19.42
Roscommon	0.00
Saginaw	1.28
Schoolcraft	0.00
Sanilac	0.00

(continued)

Table B-10. (continued)

County	Adolescent Suicide Rate
Shiawassee	0.00
St. Clair	3.37
St. Joseph	4.30
Tuscola	12.73
Van Buren	0.00
Washtenaw	0.00
Wayne	4.61
Wexford	9.31

[1] See Appendix A for indicator definitions and years.

Table B-1. Substance Use Indicators, by County[1]

County	Juvenile Arrest Rate for Liquor Law Violations	Juvenile Arrest Rate for Drug Possession	Adult Arrest Rate for Liquor Law Violations	Adult Arrest Rate for Drug Possession	Adult DUI Arrest Rate	Percentage of Accidents with an Alcohol-Induced Fatality
Alcona	1.82	0.00	0.95	0.53	7.80	100.00
Alger	20.04	0.95	7.78	2.04	11.61	50.00
Allegan	6.34	2.09	3.57	2.69	10.80	43.75
Alpena	15.97	5.32	5.23	1.93	6.82	66.67
Antrim	5.46	1.46	1.95	1.66	6.12	16.67
Arenac	12.47	2.00	5.74	5.29	17.37	0.00
Baraga	10.42	0.00	7.12	4.75	5.34	33.33
Barry	13.89	2.86	6.03	3.17	8.03	30.77
Bay	16.09	2.29	4.74	1.75	11.38	35.29
Benzie	5.19	2.31	2.04	1.22	6.85	57.14
Berrien	9.01	2.88	4.55	4.27	9.55	37.50
Branch	10.03	5.73	4.52	3.14	10.68	50.00
Calhoun	5.65	2.10	3.57	5.37	8.86	31.82
Cass	5.21	0.95	1.13	2.47	8.23	35.71
Charlevoix	8.98	0.31	4.92	0.98	6.99	0.00
Cheboygan	9.97	2.66	2.43	0.99	14.12	33.33
Chippewa	12.91	1.27	3.59	1.71	5.08	16.67
Clare	6.55	2.18	2.16	0.68	6.98	66.67
Clinton	11.45	2.34	3.87	1.74	8.59	40.00
Crawford	7.32	3.38	1.86	3.16	8.72	0.00
Delta	9.58	3.41	2.86	1.40	5.66	42.86
Dickinson	15.80	4.39	4.91	2.77	11.48	NA[2]
Eaton	2.21	1.14	0.76	1.03	4.19	36.36
Emmet	23.55	3.11	8.91	1.83	14.36	27.27
Genesee	3.49	2.77	1.66	3.11	4.69	41.43
Gladwin	3.01	3.68	1.70	3.05	12.97	0.00
Gogebic	19.49	0.54	9.33	2.17	11.21	NA[2]
Grand Traverse	12.75	4.49	4.32	2.09	10.08	16.67
Gratiot	10.46	0.84	6.08	2.70	8.60	16.67
Hillsdale	4.50	3.17	2.36	2.25	7.03	28.57
Houghton	9.64	2.60	3.41	0.71	7.50	100.00
Huron	15.33	1.35	5.49	2.34	6.95	0.00
Ingham	8.61	3.35	8.33	5.08	8.87	41.18
Ionia	17.40	2.06	4.83	1.76	10.76	12.50
Iosco	10.87	3.20	5.00	1.84	6.60	66.67
Iron	13.97	4.89	2.40	1.25	6.04	66.67
Isabella	13.70	1.65	8.92	1.72	8.32	20.00

(continued)

Appendix C
Indicator Values for Regions

Table C-1. Substance Abuse Indicator Values, by Region[1]

Region	Juvenile Arrest Rate for Liquor Law Violations	Juvenile Arrest Rate for Narcotic Violations	Adult Arrest Rate for Liquor Law Violations	Adult Arrest Rate for Narcotic Violations	Adult DUI Arrest Rate	Percentage of Accidents with an Alcohol-Induced Fatality	Adult Treatment Admission Rate	Juvenile Treatment Admission Rate
Upper Peninsula	16.80	2.81	5.86	2.33	9.23	43.10	4.93	3.10
Northern	11.03	3.02	4.76	2.21	9.33	35.19	7.40	3.52
Western	7.90	3.97	3.95	2.83	7.17	32.88	4.70	1.75
Central	6.53	2.33	4.62	3.74	8.32	30.70	3.09	1.21
Eastern	6.82	2.65	2.60	3.03	6.85	34.29	5.44	1.70
Southeastern	3.17	3.24	1.53	5.34	6.72	30.72	2.34	0.27

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-2. Community Disorganization and Transition, by Region[1]

Region	Percentage of Unregistered Voters	Percentage of Adults Who Did Not Vote in Presidential Election	Percentage of Residential Properties that are Renter Occupied	Percentage of Residential Properties that are Vacant	New Residential Building Permits Per 1,000 Persons
Upper Peninsula	6.49	44.44	17.72	24.68	4.39
Northern	1.11	39.84	13.58	32.07	7.47
Western	7.12	41.18	22.74	9.01	4.75
Central	6.65	43.21	25.58	7.71	3.83
Eastern	0.00	39.31	21.38	8.23	4.10
Southeastern	7.27	42.33	26.96	5.39	3.67

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-3. High Risk Demographic Subgroups, by Region[1]

Region	Percentage of Population that is Male Ages 15 to 34	Population Density
Upper Peninsula	14.36	23.57
Northern	12.61	51.59
Western	14.41	224.97
Central	14.84	162.58
Eastern	12.96	182.30
Southeastern	13.78	1,229.87

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-4. Community Crime, by Region[1]

Region	Juvenile Violent Crime Arrest Rate	Adult Violent Crime Arrest Rate	Homicide Rate	Juvenile Property Crime Arrest Rate	Adult Property Crime Arrest Rate	Juvenile Arrest Rate for Other Crimes[2]	Adult Arrest Rate for Other Crimes[2]
Upper Peninsula	1.30	0.63	1.74	15.50	2.28	30.32	21.54
Northern	1.38	0.85	1.94	14.36	2.08	23.96	23.44
Western	1.59	0.98	3.88	15.31	2.59	28.02	22.56
Central	1.39	1.54	3.55	6.47	2.21	15.46	24.39
Eastern	1.57	1.24	6.00	9.49	2.71	17.30	18.34
Southeastern	1.73	3.46	12.18	7.92	6.08	11.57	29.01

[1] See Appendix A for indicator definitions and years.

[2] Other crimes include arrests for nonaggrevated assault, embezzlement, crimes against the family, forgery, fraud, gambling, disorderly conduct, curfew violations (juveniles only), and runaways (juveniles only).

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-5. Extreme Economic and Social Deprivation, by Region[1]

Region	Unem-ployment Rate	Percent-age of Students Receiving Free or Reduced Lunches	Percent-age of the Population Receiving FITAP	Percent-age of the Population Receiving Food Stamps	Percent-age of Adults Without a High School Education	Percent-age of the Population Below Poverty Level	Percent-age of the Children Below Poverty Level	Median Income
Upper Peninsula	5.33	33.53	1.33	5.81	15.95	12.03	16.85	$33700.40
Northern	5.30	35.50	1.12	6.19	17.02	12.60	18.04	$34853.42
Western	3.41	30.96	1.45	5.70	15.86	10.20	14.90	$43339.45
Central	3.25	28.84	1.57	5.67	14.36	11.02	16.12	$41516.06
Eastern	4.74	32.63	2.97	8.10	17.47	12.88	19.54	$40457.89
Southeastern	3.01	29.45	2.46	6.26	17.09	11.33	17.54	$48709.30

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-6. Alcohol and Tobacco Availability, by Region[1]

Region	Alcohol Permits Per 1,000 Persons	Tobacco Outlets Per 1,000 Persons	Alcohol Sales Per Capital
Upper Peninsula	3.40	2.21	$1966.94
Northern	2.80	2.19	$1452.00
Western	1.49	1.35	$1835.93
Central	1.68	1.62	$1918.91
Eastern	1.97	1.84	$1622.09
Southeastern	1.59	1.59	$1698.75

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-7. Lack of Commitment to School, by Region[1]

Region	Dropout Rate[2]
Upper Peninsula	3.48
Northern	4.18
Western	3.82
Central	3.67
Eastern	4.27
Southeastern	4.12

[1] See Appendix A for indicator definitions and years.

[2] Dropout data for Detroit, Lansing, and Litchfield School Districts were not available.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-8. Family Conflict and Management Problems, by Region[1]

Region	Percentage of Children Living in Foster Care	Divorce Rate	Domestic Violence Arrest Rate
Upper Peninsula	1.76	4.20	3.91
Northern	2.54	4.49	3.99
Western	3.40	4.03	5.26
Central	3.10	4.52	6.52
Eastern	2.43	4.12	7.02
Southeastern	2.49	3.53	3.51

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-9. Adolescent Sexual Behavior, by Region[1]

Region	Teen Birth Rate	Teen Pregnancy Rate	Juvenile Sexually Transmitted Disease Rate
Upper Peninsula	7.51	10.33	1.39
Northern	8.54	12.77	1.65
Western	11.54	17.19	5.50
Central	9.97	16.86	5.01
Eastern	10.75	17.14	5.90
Southeastern	9.16	15.79	6.25

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table C-10. Suicide, by Region[1]

Region	Adolescent Suicide Rate
Upper Peninsula	3.97
Northern	8.23
Western	2.38
Central	3.52
Eastern	3.87
Southeastern	3.98

[1] See Appendix A for indicator definitions and years.

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Appendix D
Intercorrelations Among Risk Constructs

Table D-1. Intercorrelations Among Risk Constructs (N=83)

	STDRGLAW	STLIQLAW	STTREAT	STFATALS	STCIVIC	STMOBILE	STURBAN	STMALES	STVIO	STNONVIO	STALCPER	STSALES	STFAMDIS	STDIVORC	STSTD	STBIRPRG	STSUICID	STPOV	STDRPOUT
STDRGLAW	--																		
STLIQLAW	0.129	--																	
STTREAT	-0.016	0.251	--																
STFATALS	-0.073	-0.105	0.273	--															
STCIVIC	0.173	0.005	-0.099	-0.033	--														
STMOBILE	0.019	0.128	0.210	0.032	-0.115	--													
STURBAN	0.582	-0.404	-0.345	-0.081	0.214	-0.088	--												
STMALES	0.007	-0.005	-0.278	-0.072	0.603	0.065	0.075	--											
STVIO	0.701	-0.199	-0.121	-0.012	0.265	-0.026	0.827	0.053	--										
STNONVIO	0.687	0.236	0.144	-0.042	0.220	0.023	0.457	0.106	0.661	--									
STALCPER	-0.058	0.432	0.499	0.199	-0.107	0.355	-0.229	-0.377	-0.082	-0.036	--								
STSALES	-0.095	0.004	-0.155	-0.052	0.296	-0.475	-0.031	0.011	0.004	0.019	-0.218	--							
STFAMDIS	0.202	0.023	-0.087	-0.114	0.125	-0.088	-0.072	0.197	0.202	0.225	-0.314	-0.092	--						
STDIVORC	-0.221	0.097	0.176	0.166	-0.121	0.097	-0.368	-0.255	-0.260	-0.131	0.144	-0.037	0.053	--					
STSTD	0.496	-0.312	-0.169	-0.008	0.274	0.003	0.550	0.282	0.730	0.410	-0.276	-0.135	0.489	-0.121	--				
STBIRPRG	0.440	-0.211	0.148	0.045	0.335	0.040	0.292	0.080	0.613	0.380	-0.110	-0.059	0.537	0.043	0.804	--			
STSUICID	-0.092	0.087	0.127	0.018	-0.015	-0.114	-0.034	-0.125	-0.013	-0.001	0.035	0.086	-0.122	0.050	-0.104	-0.030	--		
STPOV	0.297	0.103	0.467	0.215	0.268	0.109	0.140	-0.203	0.498	0.320	0.526	0.046	0.149	0.014	0.365	0.621	0.152	--	
STDRPOUT	0.171	-0.008	0.211	0.023	-0.014	-0.124	0.000	-0.273	0.107	0.134	0.060	0.021	0.117	0.082	0.016	0.149	0.116	0.240	--

Appendix E
Regional Risk Construct Scores

Table E-1. Risk Construct Scores, by Region

Region	STDRGLAW	STLIQLAW	STTREAT	STFATALS	STCIVIC	STMOBILE	STURBAN
Upper Peninsula	-0.79	1.43	0.58	1.87	0.99	-0.02	-0.63
Northern	-0.62	0.78	1.48	0.15	-1.08	1.94	-0.57
Western	0.95	-0.27	-0.06	-0.35	0.23	-0.18	-0.19
Central	-0.54	0.11	-0.75	-0.82	0.69	-0.37	-0.33
Eastern	-0.57	-0.75	0.13	-0.04	-1.40	-0.95	-0.29
Southeastern	1.57	-1.30	-1.38	-0.82	0.56	-0.42	2.01

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table E-2. Risk Construct Scores, by Region

REGION	STMALES	STVIO	STNONVIO	STPOV	STALCPER	STSALES
Upper Peninsula	0.61	-0.97	0.68	0.28	1.42	1.12
Northern	-1.38	-0.72	0.30	0.78	0.99	-1.52
Western	0.66	-0.04	0.76	-1.03	-1.10	0.44
Central	1.15	-0.31	-1.16	-1.08	-0.58	0.87
Eastern	-0.99	0.19	-1.37	1.40	-0.06	-0.65
Southeastern	-0.05	1.84	0.80	-0.36	-0.68	-0.26

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table E-3. Risk Construct Scores, by Region

REGION	STDRPOUT	STFAMDIS	STDIVORC	STSTD	STBIRPRG	STSUICID
Upper Peninsula	-1.42	-1.35	0.15	-1.33	-1.56	-0.18
Northern	0.80	-0.50	0.95	-1.21	-0.77	1.95
Western	-0.32	0.90	-0.33	0.56	1.07	-0.97
Central	-0.79	1.10	1.02	0.33	0.47	-0.40
Eastern	1.10	0.60	-0.08	0.74	0.79	-0.23
Southeastern	0.63	-0.75	-1.71	0.90	0.00	-0.17

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Appendix F
Regional Overall Risk Scores

Table F-1. Overall Risk Score, by Region

Region	Overall Risk Score
Upper Peninsula	0.57
Northern	1.11
Western	0.47
Central	-0.88
Eastern	-1.54
Southeastern	0.26

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Appendix G
Regional Risk Construct Ranks

Table G-1. Risk Construct Score Ranks, by Region

REGION	STDRGLAW	STLIQLAW	STTREAT	STFATALS	STCIVIC	STMOBILE	STURBAN
Upper Peninsula	1	6	5	6	6	5	1
Northern	3	5	6	5	2	6	2
Western	5	3	3	3	3	4	5
Central	4	4	2	1	5	3	3
Eastern	2	2	4	4	1	1	4
Southeastern	6	1	1	1	4	2	6

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table G-2. Risk Construct Score Ranks, by Region

REGION	STMALES	STVIO	STNONVIO	STPOV	STALCPER	STSALES
Upper Peninsula	4	1	4	4	6	6
Northern	1	2	3	5	5	1
Western	5	4	5	2	1	4
Central	6	3	2	1	3	5
Eastern	2	5	1	6	4	2
Southeastern	3	6	6	3	2	3

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Table G-3. Risk Construct Score Ranks, by Region

REGION	STDRPOUT	STFAMDIS	STDIVORC	STSTD	STBIRPRG	STSUICID
Upper Peninsula	1	1	4	1	1	4
Northern	5	3	5	2	2	6
Western	3	5	2	4	6	1
Central	2	6	6	3	4	2
Eastern	6	4	3	5	5	3
Southeastern	4	2	1	6	3	5

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.

Appendix H
Regional Overall Risk Ranks

Table H-1. Overall Risk Score Rank, by Region

Region	Overall Risk Rank
Upper Peninsula	5
Northern	6
Western	4
Central	2
Eastern	1
Southeastern	3

Note: Southeastern region includes Detroit. Data were not available separately for the Detroit area.